

REPORT
ON
IRRIGATION PROJECTS

BY
F. E. MORGAN, Esq.
Executive Engineer, Projects Division

(Appendix to G.O. No. 223 L., dated 11th August 1923)



MADRAS
PRINTED BY THE SUPERINTENDENT, GOVERNMENT PRESS

1923

GOVERNMENT OF MADRAS

PUBLIC WORKS DEPARTMENT (IRRIGATION)

G.O. No. 223 I., 11th August 1923

Projects (Madras Presidency)—Revision—Report by Mr. F. E. Morgan, late Executive Engineer on special duty—Recorded.

READ—

Report by F. E. MORGAN, Esq., late Executive Engineer on Special duty, dated 27th July 1922.

Order—No. 223 I., dated 11th August 1923.

The report submitted by Mr. F. E. Morgan, late Executive Engineer on special duty, together with the remarks of the Chief Engineer for Irrigation will be recorded and printed as an appendix to these proceedings.

(By order of the Governor in Council)

A. V. RAMALINGA AYYAR,
Offg. Secy. to Govt., P.W.D. (General and Irrigation).

To the Superintending Engineers of Circles.
„ Revenue Department.
„ Board of Revenue (Land Revenue and Settlement).
„ Local Self-Government Department.

Editor's Table.

[Appendix.

REPORT ON IRRIGATION PROJECTS BY F. E. MORGAN, Esq.,
EXECUTIVE ENGINEER, PROJECTS DIVISION.

The Projects division was formed on 12th August 1921 with the following establishment :—

One Executive Engineer, one Assistant Engineer, seven draughtsmen (inclusive of three from the office of the Chief Engineer for Irrigation), one tracer, one clerk, one typist and four peons. It was originally intended that the division should be in existence until 31st March 1923, but owing to the necessity for retrenchment in expenditure orders were received on 31st January 1922 to close it on the 30th April 1922.

2. The division was formed for the examination of the live irrigation projects of the presidency with a view to a final decision being come to on them and orders were received to take up the projects in Ganjām district first.

3. A list of the projects in the presidency, which were lying over for one reason or another when the division was formed, with a short description of them and their present stage of investigation is given in the appendix to this report. It will be seen from the appendix that there were ten projects in Ganjām district to be examined. All these have been inspected and examined and the following recommendations have been made (the number against a project refers to that in the appendix):—

No. 4 *Girisola channel*.—Estimate, amounting to Rs. 2,81,700, submitted for sanction.

No. 1 *Allipur channel*.—The possibility of including the ayacut of this channel in that of the proposed *Girisola channel* was investigated and found to be possible, but only at a prohibitive cost. It is a small scheme and can be further investigated by the local division.

No. 10 *Surla swamp reclamation*.

No. 2 *Bahuda reservoir (Govindapur)*.

No. 7 *Mohada reservoir*.

It was recommended that these projects be finally abandoned.

No. 3 *Dharabasingi reservoir (Mandasa Estate)*.

It was recommended that a preliminary investigation be made of this project.

No. 8 *Rushikulya reservoir*.

No. 6 *Godahaddo (Godahallow) reservoir*.

No. 9 *Supply channel to Surada reservoir*.

Nos. 5 and 8 are schemes for the full development of the *Rushikulya* system and No. 9 for supplementing the supply to the system which is insufficient for the existing ayacut in some years. The most promising of the three schemes is No. 8 and the investigation of a new site for a dam is now in progress. The field work was completed early in June and the project is being worked out in the office of the Chief Engineer for Irrigation. Further consideration of items Nos. 5 and 9 is deferred until a decision is come to on the *Rushikulya reservoir* project.

No. 6 *Gaumzu (Govuz) Tampara reclamation*.—This scheme is not feasible unless the reclaimed area can be irrigated by the *Rushikulya* canal and therefore the final investigation has been deferred until a decision is come to on the *Rushikulya* and *Godahaddo reservoir* projects.

Koratoli tank improvements.—These were referred to the division, though not in the nature of a project, and it has been recommended that they be given effect to.

4. In addition to the Ganjām projects, seven others were dealt with before the division was abolished. The estimate for the aqueduct of the Polavaram Island Extension Project, No. 14, was revised. In *Kurnool* district, the *Thokapalli* project, No. 23, was revised and its scope reduced. The previous estimate of Rs. 12 lakhs

was increased to Rs. 16,74,000. No final recommendation was made as the scheme is feasible if a sufficiently high water-rate can be obtained. In *Nellore* district the *Vengalapuram* Reservoir Project, No. 34, was under revision when the division was abolished. This is being carried on in the office of the Chief Engineer for Irrigation. In *South Arcot* district two new projects had been put forward by the Collector, one on the *Manianadhi*, No. 36, and the other on the *Muktanadhi*, No. 37. These projects were inspected and it was recommended that certain statistics be collected before further investigation be undertaken. In *Coimbatore* district, the irrigation portion of the *Siruvani* scheme, No. 46, for the water-supply of *Coimbatore* was examined and it was recommended that some further investigation be made. The project for a flood moderating reservoir on the *Tammileru*, No. 15, in *Kistna* district, was inspected and the rough estimate for the scheme revised. The reservoir would only partially control floods in the river and further investigation is not recommended.

5. Of the remaining 33 projects in the appendix to this report, nine are being investigated by the local officers—

- No. 13 Coringa island extension,
- No. 18 Duvvaleru anicut,
- No. 24 Tippiyapalem reservoir,
- No. 35 Madurantakam tank improvements,
- No. 38 Reclamation of Kaliveli swamp,
- No. 40 Marandahalli project,
- No. 42 Pasambalur tank,
- No. 43 Pimbalur tank,
- No. 47 Kilakancheri project,

and gaugings of the rivers connected with six others are being conducted—

- No. 11 Nagavalli reservoir,
- No. 26 Papaganni reservoir,
- No. 31 Pulikonda reservoir,
- No. 39 Badathlov reservoir,
- No. 49 Meengarai reservoir,
- No. 50 Papanasam reservoir.

6. Of the projects not dealt with by the division, including those referred to in the previous paragraph, there are only a few which are likely to fulfil the conditions of a 'productive' work at the present yield on capital outlay insisted on, unless the water-rates are increased a good deal more than has hitherto been proposed in connexion with any project. The remarks made below on the projects that have not been examined in the Projects division are based on personal knowledge of them prior to the division being formed.

Gottavari district.—The two projects in this district are for extension of delta irrigation to *Polavaram* and *Coringa Islands*, Nos. 13 and 14. The supply for both schemes is assured, but the water-rates previously proposed will have to be considerably enhanced to make the schemes productive. The *Polavaram Island* project is the more promising of the two.

Guntur district.—The only project in this district is one for pumping from the *Kistna* at *Pratur*, No. 17, to irrigate an area of land in the *Kistna Western delta* not commanded by the canals. The scheme is a sound one and when the price of the hydro-electric and pumping plant required has fallen a little more, it should be possible to work out a productive project.

Kurnool district.—There are nine projects in this district upon which a decision has not yet been come to. The projects to the west of the *Nallamalais*, *Gazuladinne*, No. 19, *Gudempad*, No. 20, and *Krishnapuram*, No. 21, are not likely to prove feasible as productive works even if the water-rates are raised considerably, if in the financial forecast due account is taken of the frequent partial and occasional almost complete failures that will occur on their ayacuts. The district is subject to famine, but such projects as these which are dependent for their supplies on rivers, the catchments of which are subject to the same deficiency of rainfall as the area to be irrigated, are not protective unless the capacities of the reservoirs and areas of the ayacuts are such that a balance is carried forward in a year of normal rainfall to

guard against a deficiency in the rainfall of the following year. To construct reservoirs of such capacities is not financially feasible. The only really famine protective source in Kurnool district is the Tungabhadra and two projects have been proposed in connexion with it, both of which involve increasing the discharge of the Kurnool-Cuddapah canal.

Of the two projects (Owk No. 22, and Velgode, No. 25) only one could be carried out, and Velgode is the more promising as the soil is more suitable for irrigation. The difficulty with this project lies in the widening of the Kurnool-Cuddapah canal at a reasonable cost and in a reasonable time, and, until this problem has been solved, the project must lie over, the alternative is to run the canal deeper which also presents many difficulties. To the east of the Nallamalais the conditions are more favourable for small reservoir projects, though partial failures of the ayacuts in connexion with them will occur fairly frequently but not to such an extent as in the case of the small projects to the west. Extension of irrigation in this district will probably be limited to these projects (Thokapalle, No. 23, Tipayapalem, No. 24, and Duvvaleru, No. 18) and to extensions under the Kurnool-Cuddapah canal.

Cuddapah district.—The investigation of the supplies that would probably be available for the two projects in this district (Papaghni, No. 26, and Pullampet, No. 27) are in progress, but even if these prove to be satisfactory it is very improbable that productive schemes can be worked out.

Nellore district.—There are six projects in this district and none of the sources of supply to them can be classed as famine protective and they should be considered only with a view to carrying them out as productive works. The only protective source in this district is the Penner in connexion with which no projects are at present under consideration. Eventually, however, the gap in the hills between Cuddapah and Nellore districts may be dammed, if the surplus water available in the Penner justifies it or if the Tungabhadra project is carried out, but hitherto it has not proved a feasible proposition.

Of the six projects, that for a reservoir on the Palaru (Vengalapuram, No. 34) is by far the most promising. Examination of the supplies available in the river for a number of years has shown that the construction of the reservoir is justifiable, but it is doubtful whether the ryots in the project area will pay the water-rate required to make the scheme a productive one. Of the remaining five projects, three are in connexion with the same river, the Manneru and a tributary of it, and the supplies available have to be examined. Of these three projects (Rallapad, No. 32, Gandipalem, No. 30, and the supply channel to Mopad and Pachavaram tanks) the first is the most promising, but there is little chance of its proving productive.

The remaining two projects (Pulikonda, No. 31, and Aileru, No. 29) are neither of them likely to fulfil the conditions of a productive work, even if the supplies available prove to be better than was anticipated. The probable river supplies available are under investigation. As long as the rate of interest on capital outlay required to class a project as a productive work stands at its present figure, there is very little chance of any extension of irrigation on a fairly large scale in Nellore district. The project that has the best chance is Vengalapuram, No. 34.

The only important projects in the south of the presidency are the Cauvery reservoir, No. 44, which is held up pending the settlement of the dispute with Mysore about their reservoir on the Cauvery, the Bhavani reservoir, No. 45, which will not be feasible if the Cauvery project is carried out and the Papanasam reservoir, No. 50, for which the river supply available is under investigation. It is however doubtful whether a productive scheme is possible.

8. There are five projects sanctioned for execution as famine-relief works when the necessity arises. The most important of these is that for the construction of a reservoir on the Baguva in Ganjam district. Gauges were read for one year, which fortunately was a year in which the rainfall was below the average, at the site for the dam and these were examined in the projects division. The result of this examination showed that a bigger area could be irrigated than had been proposed, but further investigation was not made as sanctioned works did not come within the scope of the work of the division. If it is possible to secure a bigger ayacut than

has been proposed, the project should be reconsidered as a famine protective work as the area commanded is in need of protection. If this does not prove to be feasible, the project should be removed from the list of famine-relief works as the construction of a high earthen dam is unsuitable for the purpose, owing to the care required in its construction and to the slowness of the essential preliminary work before the actual construction of the bund commences. Even in a severe famine it is doubtful whether more than a tithe of the work would be carried out by famine labour and the balance would have to be done by ordinary labour.

9. The projects in the Presidency that appear to me to have a reasonable chance, as far as present investigation goes, of being carried out, if funds permit in the near future, as either productive or protective works are—

No. 1 Allipur channel, Ganjām district.

No. 4 Girisola channel,

No. 6 Gaunzu Tampara reclamation, Ganjām district.

No. 8 Rushikulya reservoir,

Nos. 4, 6 and 8 are protective works and Nos. 6 and 8 would be merged into one project.

No. 13 Coringa island extension, Gōdāvari district.

No. 14 Polavaram island extension, Gōdāvari district.

No. 16 Kistna reservoir, Kistna and Guntūr districts.

If the Cauvery reservoir project is carried out, then No. 16 could only be commenced when the former is approaching completion.

No. 17 Pratur pumping extension, Guntūr district.

No. 24 Tippiyapalem reservoir, Kurnool district.

No. 44 Cauvery reservoir, Tanjore district.

27th July 1922.

F. E. MORGAN,
Executive Engineer, Projects Division.

INDEX TO PROJECTS.

| District and name of project. | Refer- ence to page. | District and name of project. | Refer- ence to page. |
|---|----------------------------|---|----------------------------|
| Ganjam district— | | Bellary, Anantapur, Kurnool, Cuddapah and Nellore districts— | |
| 1. Allipur channel | 6 | 28. Tungabhadra reservoir | 17 |
| 2. Bahuda (Govindapur) reservoir | 6 | Nellore district— | |
| 3. Dharabasingi reservoir | 6 | 29. Atlera reservoir | 18 |
| 4. Girisola channel | 6 | 30. Gandipalem reservoir | 18 |
| 5. Godahaddo (Godahallow) reser- voir | 7 | 31. Pulikonda reservoir | 18-19 |
| 6. Gaunzu (Govuz) Tampara recla- mation | 7 | 32. Rallapad reservoir | 19 |
| 7. Mohada reservoir | 7 | 33. Supply channel to Mopad and Machaveram tanks | 19-20 |
| 8. Rushikulya reservoir | 7-8 | 34. Vengalapuram reservoir... .. | 20 |
| 9. Supply channel to Surada reser- voir | 8 | Chingleput district— | |
| 10. Surla swamp reclamation | 8 | 35. Madurantakam tank improve- ments | 21 |
| Vizagapatam district— | | South Arcot district— | |
| 11. Nagavalli reservoir | 9 | 36. Maninadhi reservoir | 22 |
| 12. Tuni reservoir | 9 | 37. Muktanadhi reservoir | 22 |
| Gōdāvari district— | | 38. Reclamation of Kaliveli swamp... .. | 22 |
| 13. Coringa island extension | 10 | Salem district— | |
| 14. Polavaram island extension | 10 | 39. Badathalav anicut | 23 |
| Kistna district— | | 40. Marandahalli anicut extension | 23 |
| 15. Tammileru reservoir | 11 | 41. Vaniar reservoir | 23 |
| Kistna and Guntūr districts— | | Trichinopoly district— | |
| 16. Kistna reservoir | 12 | 42. Pasambalur tank | 24 |
| Guntūr district— | | 43. Pimbalur tank | 24 |
| 17. Pratur pumping extension | 13 | Tanjore district— | |
| Kurnool district— | | 44. Cauvery reservoir | 25 |
| 18. Duvvaleru anicut | 14 | Coimbatore district— | |
| 19. Gazuladinne reservoir | 14 | 45. Bhavani reservoir | 26 |
| 20. Gudempad reservoir | 14 | 46. Siruvani water-supply and irriga- tion project | 26 |
| 21. Krishnapuram tank | 14-15 | Malabar district— | |
| 22. Owk reservoir | 15 | 47. Kilakancheri project | 27 |
| 23. Thokapalle reservoir | 15 | 48. Malampuzha reservoir | 27 |
| 24. Tippyapalem reservoir... .. | 15 | 49. Meengarai reservoir | 27 |
| 25. Velgode reservoir and Kurnool- Cuddapah canal improvements. | 15 | Tinnevely district— | |
| Cuddapah district— | | 50. Papanasam reservoir | 28 |
| 26. Papagani reservoir | 16 | | |
| 27. Pullampet reservoir | 16 | | |

APPENDIX

Ganjam district.

No. 1 Allipur (Alipur) Channel.

A small scheme for the irrigation of 1,200 acres by re-excavating an old silted channel taking off from the left bank of the Mahanadi between the villages of Kolipalli and Alipur, a few miles north of Aska. Levels were taken by the Projects Division to see whether the area, which it is proposed to irrigate, could be commanded by extending the proposed Girisola channel and it was found that though it could be commanded the cost of extending the channel would be prohibitive. The Executive Engineer, Projects Division, recommended that the scheme which is likely to be a highly remunerative one be investigated by the local division.

Remarks by the Chief Engineer for Irrigation.

The scheme is roughly estimated to cost Rs. 25,000 and a revenue of about Rs. 4,000 is expected. The Superintending Engineer has been asked to investigate the scheme in detail and submit a report.

No. 2 Bahuda (Govindapur) Reservoir.

The project provides for the construction of an earthen bund across the Bahuda river near the village of Govindapur. The capacity of reservoir proposed is 1,497 millions cubic feet and the proposed ayacut is 15,600 acres of which 6,400 acres are at present irrigated from the Bahuda river and 3,000 acres would have to be reclaimed from Surla swamp. In 1905 the estimated cost of the project (inclusive of that for the reclamation of the swamp) was Rs. 24.03 lakhs and the net revenue anticipated was Rs. 58,470, representing a return of 2.43 per cent on the capital outlay. The Executive Engineer, Projects Division, in 1922, has recommended that the project be abandoned, as the effect of the proposed reservoir would be to reduce considerably the magnitude of the floods in the river and to absorb most of the freshes, with the result that there would be fairly frequent and prolonged closures of the Sonnapuram outlet, through which the rivers pass into the sea. These closures would cause extensive and prolonged submergence round the Surla swamp and also render the Gaunzu Tampara reclamation ineffective.

Remarks by the Chief Engineer for Irrigation.

In arriving at the return of 2.43 per cent, the Public Works Department officers assumed a water-rate of Rs. 5 per acre, on an average, on dry lands and a consolidated wet assessment of Rs. 7-8-0 per acre on the lands to be reclaimed from the Swamp. The Board of Revenue, however, considered these rates to be high and recommended the adoption of a rate of Rs. 3-8-0 per acre, on the average, in the case of dry lands and Rs. 5-8-0 per acre on the swampy lands. The anticipated net revenue worked out by the Board amounted to Rs. 35,187 which gave a return of only 1.4 per cent on the estimated capital outlay, which was raised from Rs. 24.03 lakhs to Rs. 24.88 lakhs on account of the extra cost of land compensation allowed.

The Superintending Engineer, whose remarks were called for on the proposal of the Executive Engineer, Projects Division, to abandon the scheme, was also of opinion that it is not worth further consideration.

The project has accordingly been abandoned, both on engineering and financial grounds (G.O. No. 249 I., dated 7th October 1922).

No. 3 Dhgrabasingi Reservoir (Mandasa Estate).

The project is for the construction of a dam across the Sunnamudiar about one mile below the village of Dharabasingi to form a reservoir and irrigate directly from it. The Executive Engineer, Projects Division, inspected in 1921 and reported that the project was worth investigating though it was doubtful whether a paying project could be evolved.

Remarks by the Chief Engineer for Irrigation.

The preliminary investigation of the scheme was taken up at the request of the zamindar of Mandasa whose estate will solely be benefited by the work, if carried out. Before the scheme can be investigated in detail, the zamindar's consent thereto is necessary. The zamindar is prepared to undertake the work on condition that the cost is advanced to him as loan without interest by Government. As the loan asked for could not be complied with, the detailed investigation of the scheme is deferred.

No. 4 Girisola Channel.

The proposed channel is for an extension of irrigation of 7,208 acres in the Rushikulya system in Gumsur and Aska taluks and will take off from the Budunadhi above the Gumsur anicut. The Superintending Engineer submitted plans and estimates for the project, the estimated cost of the project being Rs. 1,99,000. This estimate was revised in the Projects Division and the revised estimate for Rs. 2,81,700 was submitted to the Chief Engineer for Irrigation in April 1922. The net revenue anticipated is Rs. 11,725 which represents a return of 4.16 per cent on the estimated capital outlay of Rs. 2,81,700. The scheme is a protective one.

Remarks by the Chief Engineer for Irrigation.

The cost of the scheme as revised by the Chief Engineer for Irrigation comes to Rs. 2.91 lakhs. The net revenue anticipated, viz., Rs. 11,725, will give a return of about 4 per cent on the capital outlay. The remarks of the Board of Revenue have been called for on the financial aspect of the project and as to whether the tract commanded is liable to famine and requires protection, so as to justify the execution of the scheme as an ordinary 'unproductive work.'

MAP
of the
GANJAM DISTRICT
SCALE 16 MILES TO 1 INCH.



REFERENCE.

- SYSTEMS IN OPERATION. ----- ○
- PROJECTS UNDER INVESTIGATION. ----- ◐
- PROJECTS ABANDONED. ----- ○
- PROJECTS FOR WHICH ESTIMATES
ARE UNDER CONSIDERATION. ----- ◑
- PROJECTS IN ABEYANCE PENDING VERIFICATION
OF WATER SUPPLIES OR PENDING A DECISION
BEING COME TO ON OTHER SCHEMES OR FOR
OTHER REASONS. ----- ○
- IRRIGATED AREA. ----- ◑

No. 5 Godahaddo (Godahallow) Reservoir.

The object of this project is to improve the supply to the Rushikulya system and it is an alternative to that for a reservoir on the Rushikulya (No. 8). It is proposed to construct an earthen bund across the Godahaddo about three miles above Pattupuram village at the 27th milestone on the Aska-Ichchhapuram road. This scheme was lying over pending a decision being come to on certain improvements proposed to the Rushikulya system and as most of these improvements will be shortly carried out the project has been re-examined by the Projects Division. Gauges have been read in the Godahaddo for ten years and the discharges deduced from them showed that the Rushikulya river had a surer supply and that its incidence was more favourable for protective storage. As the cost of a reservoir on the Godahaddo has been roughly estimated to be about the same as that of a reservoir on the Rushikulya, the Executive Engineer, Projects Division, recommended that the project be shelved in favour of the Rushikulya Reservoir Project which is now (May 1922) under investigation. The Government ordered the project to be abandoned in G.O. No. 83 I., dated 2nd March 1922, but this decision should be reconsidered if the Rushikulya Reservoir Project has to be abandoned.

Remarks by the Chief Engineer for Irrigation.

As stated by the Special Officer, the project is intended to supplement the supply to the Rushikulya system and is an alternative to the Rushikulya reservoir project (No. 8 below). The effective capacity of the proposed reservoir is 3,745 million cubic feet equivalent to run-off of 4.74 inches from the catchment. The total storage required, in the estimation of the Executive Engineer, Projects Division, for the full development of irrigation under the Rushikulya canal and for the existing irrigation under Godahaddo is 3,315 million cubic feet.

The cost of the project, as estimated in 1906, amounted to Rs. 15.18 lakhs.

The revenue aspect of the scheme has not been examined.

The scheme, though abandoned in G.O. No. 83 I., dated 2nd March 1922, will be reconsidered in case the execution of the Rushikulya reservoir project is not found feasible.

No. 6 Gaunzu (Govuz) Tampara Reclamation Project.

This is a proposal to drain a fresh-water swamp of 4,600 acres called Gaunzu Tampara, five miles to the east of Berhampur and three miles to the south-east of Gopalpur port, to reclaim thereby a major portion of it 4,000 acres, and render it fit for wet cultivation, the remaining 600 acres being either too low or required for minor drainage channels. The soil of the swamp is rich with the accumulation of centuries of silt and vegetable matter. The estimated cost of the project in 1905 was Rs. 6.72 lakhs and the revenue as anticipated by the Special Superintending Engineer was Rs. 58,700 equivalent to a return of 8.73 per cent on the capital outlay. As the reclaimed area could not be irrigated unless the supply to the Rushikulya system was increased further consideration of the project was deferred until orders were passed on certain projects for supplementing the supply to the system. The Executive Engineer, Projects Division, proposed to revise the project, making certain modifications in its details, and this proposal was approved by the Chief Engineer for Irrigation. The revision will be taken up when it has been decided that either the Rushikulya Project or Godahaddo Project is a practicable proposition.

Remarks by the Chief Engineer for Irrigation.

The Superintending Engineer has been asked to revise the proposals connected with the scheme, on the lines suggested by the Executive Engineer, Projects Division.

No. 7 Mohada Reservoir Project.

It was proposed to construct a tank of 250 million cubic feet capacity by forming a high earthen bund at the site of the existing one of the Hatta tank of Kumarapuram, just above the Ichchhapur channel of the Rushikulya system at about mileage 15.5. The reservoir would be supplied by a channel excavated from above drop No. 1 in the Ichchhapur channel.

Detailed plans and estimates were submitted for the project by the Superintending Engineer, the total estimate being Rs. 5,20,600.

The water stored would be utilized for the protection of 7,000 acres of land irrigated from four nallahs now classed as canal fed, and another 3,000 acres under the Ichchhapur extension channel. The supply to the whole 10,000 acres is stated to be precarious. The Executive Engineer, Projects Division, reported in 1921 that the soil available was unsuitable for the construction of a bund of even moderate height and recommended that the project be abandoned on that ground, apart from the financial aspect of the scheme which was hopeless.

Remarks by the Chief Engineer for Irrigation.

The Executive Engineer, Projects Division, considered that the cost of the scheme would come up to about Rs. 8.04 lakhs.

The financial aspect of the project was not considered as the scheme was not found feasible from an engineering point of view in the first instance.

The project has therefore been abandoned (G.O. No. 82 I., dated 2nd March 1922).

No. 8 Rushikulya Reservoir.

Formerly known as the Boradapalle reservoir project. The project is for the formation of a reservoir on the Rushikulya river to supplement the supply to and fully develop the Rushikulya System. Sites for dams at or near Boradapalle, Singapuram and Balea Gutch were

proposed originally and after close investigation, in 1905-06, it was decided that the most suitable site was that near Singapuram. It was estimated (G.O. No. 348 I., dated 21st July 1914) that the cost of a reservoir of 6,429 million cubic feet capacity would be Rs. 23.9 lakhs and that for a reduced capacity of 1,176 million cubic feet the cost would roughly be Rs. 13.89 lakhs. In the Government Order referred to above, it was decided that further consideration of the project should be deferred until the question of certain improvements connected with the Rushikulya System was settled. Nearly all the improvements referred to will be carried out in the near future and the project was re-examined by the Projects Division in 1921-22. The area to which irrigation can be extended in the Rushikulya System has not yet been accurately determined, but on the best data available, the Executive Engineer, Projects Division, has estimated that the ultimate ayacut will be 130,500 acres, the existing ayacut being 106,000. The increase in storage capacity required in the system for its full development is estimated at 2,500 million cubic feet or for the adequate protection of the existing ayacut only, 1,100 million cubic feet. For these capacities it was roughly estimated that the cost of a reservoir at Singapuram would be Rs. 26 lakhs and Rs. 22 lakhs respectively at current rates. The Executive Engineer, Projects Division, recommended that further investigation of the river be made to see if it would not be possible to find a cheaper site. This proposal was approved by the Chief Engineer for Irrigation and the detailed investigation of a site for a dam at Nimmapalle, five miles above Surada, is now in progress (May 1922).

Remarks by the Chief Engineer for Irrigation.

The site for the dam has been investigated by the Special Officer and the recommendations made by him are under the consideration of the Chief Engineer for Irrigation.

Supply of water available for storage is sufficient.

The financial aspect of the scheme has not yet been examined.

No. 9 Supply channel to Surada Reservoir.

The scheme comprises the construction of a regulator across the Rushikulya at Nimmapalle, $3\frac{1}{2}$ miles above the Boradi weir of the Surada Reservoir, and the cutting of a channel $3\frac{1}{4}$ miles in length from above the regulator to the Surada Reservoir. The Superintending Engineer, I Circle, submitted in 1921 plans for the project and an estimate amounting to Rs. 6,41,100. The plans and estimate were referred to the Executive Engineer, Projects Division, who after inspection recommended that further investigation be made of certain details of the scheme. The further consideration of the scheme has been postponed pending a decision being come to on the Rushikulya and Godahaddo Projects (Nos. 8 and 5) as if either of these projects were carried out the supply channel project would be unnecessary.

Remarks by the Chief Engineer for Irrigation.

The cost of the scheme, including provision for certain items suggested by the Executive Engineer, Projects Division, would come to about Rs. 6.71 lakhs. The scheme is intended only to supplement the supply to the Rushikulya System which, at present, is insufficient for the existing ayacut in some years. As stated by the Special Officer, the project would become unnecessary if the Rushikulya Reservoir Project or, in the alternative, the Godahaddo project is carried out.

No direct return from the project is expected.

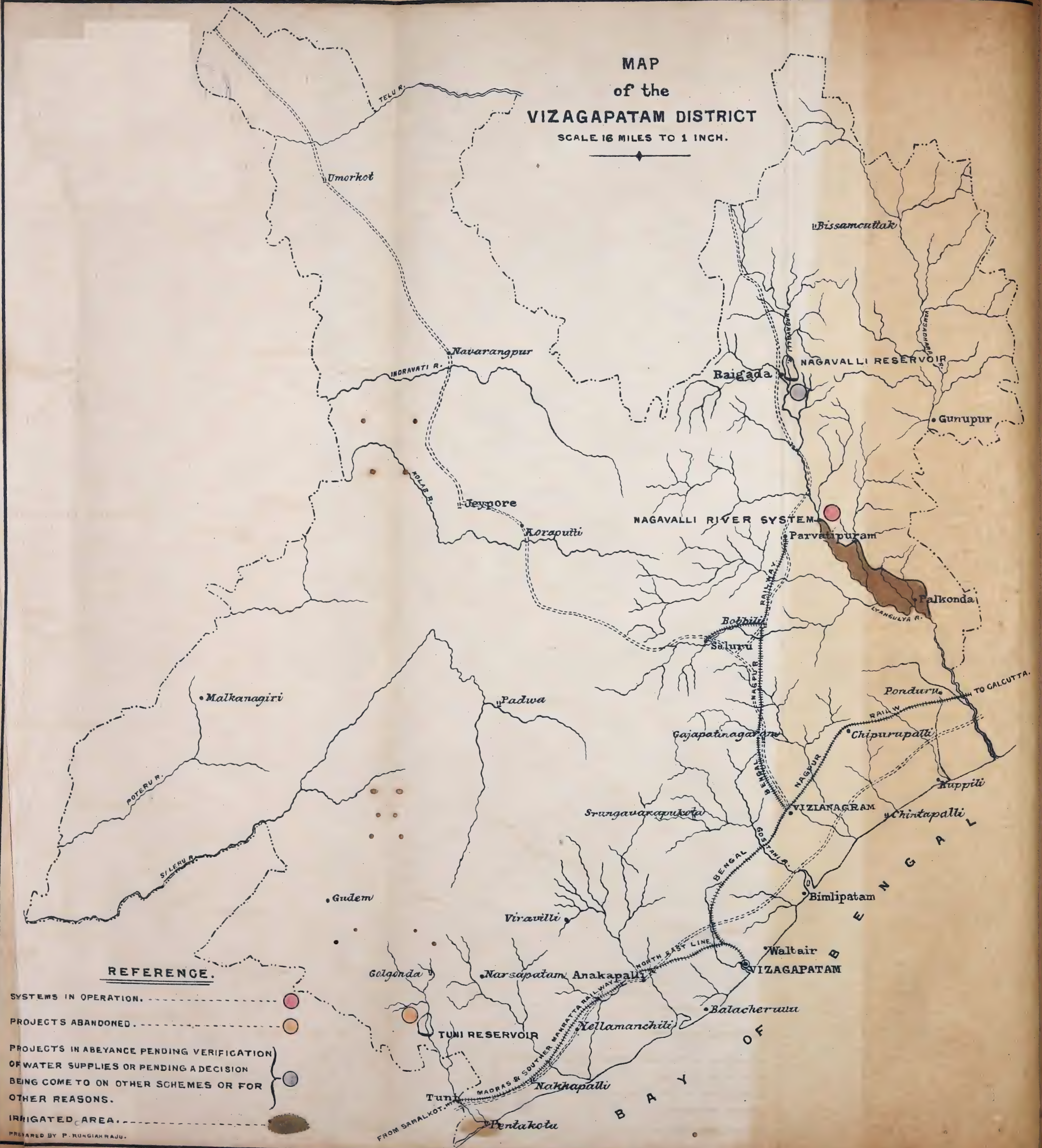
No. 10 Surla Swamp Reclamation.

It was proposed to reclaim and render fit for cultivation a portion of the large area of land, now submerged by sea water during high tides, situated two miles to the east of Iobchhapuram and to the south and west of the salt factory at Surla. The reclamation would be effected by extending an existing flood-bank of the Bahuda river, which passes through the swamp, to the swamp and across it and by flood-banking three drains which enter the swamp and which would be crossed by the main flood-bank. Four blocks surrounded by banks would thus be formed, the area enclosed being about 4,100 acres of which 3,535 acres would have to be drained by pumping as they are too low to drain by gravitation. It was estimated in 1905 that the reclamation would cost Rs. 4,95,000. The project is dependent on that for a reservoir on the Bahuda river as the area drained by pumping would be irrigated by the reservoir. The Executive Engineer, Projects Division, in 1921 recommended that the project be abandoned as the proposals involved such a reduction in the tidal compartment capacity behind the Sonnapuram outlet to the sea, the outlet is that from the swamp, that it would close more frequently than it does at present and cause more frequent and extensive submersion round the swamp than occurs at present. It is also essential for the success of the Gaunzu Tampara Reclamation Project that the Sonnapuram outlet be kept open. This recommendation has been accepted by the Chief Engineer for Irrigation.

Remarks by the Chief Engineer for Irrigation.

The scheme has since been abandoned along with the Bahuda reservoir project (No. 2) on which it depended for supply of water for the irrigation of the reclaimed lands (G.O. No. 249 I., dated 7th October 1922).

MAP
of the
VIZAGAPATAM DISTRICT
SCALE 16 MILES TO 1 INCH.



NOTE.—Reproduced from the original received from the
Chief Engineer for Irrigation, Madras.

Vandyke, Survey Office, Madras
1923.

Vizagapatam district:

No. 11 Nagavalli Reservoir.

The proposal was to form a reservoir across the Nagavalli River either at Chollapadam or at Rayagedda. It is stated that a reservoir at one of the above sites would, if not absolutely necessary, be very useful in the interests of the existing Nagavalli River Project, which has recently come into operation and other irrigation works on the same river. From a preliminary investigation, the approximate cost of the upper Rayagedda scheme was ascertained to be Rs. 26.14 lakhs and that of the lower or Chollapadam one to be Rs. 41.40 lakhs. The Special Superintending Engineer recommended the upper one as being preferable to the lower. The Chief Engineer for Irrigation (Mr. H. E. Clerk) noted under date 9th February 1911 (vide Dis. No. 259, dated 6th February 1911), that the project was so unlikely to be carried out, or even investigated for so long a time to come, that the matter might be dropped and the papers recorded. In November 1913, the Superintending Engineer, however, submitted a report on the subject and stated that there were great facilities for the construction of a reservoir and that the site selected by Mr. Laurie might be investigated. The question is now under consideration as to (1) what evidence there is from recorded discharges that the existing Nagavalli River Project will fail and (2) whether there is any possibility of the proposed reservoir being in itself a productive work, as it was thought that the existing project could do little more than fulfil the conditions of a productive work. Mr. Laurie's site is on a tributary of the Nagavalli river called the Jangharati or Katnagedda. Velocity observations are being made in the river as opportunity occurs.

Remarks by the Chief Engineer for Irrigation.

The scheme, on the whole, does not appear to be promising. But further observations are being made, as stated by the Special Officer.

No. 12 Tuni Reservoir.

The proposal is to construct a reservoir on the Tuni river for the irrigation of about 40,000 acres. The project is under consideration.

Remarks by the Chief Engineer for Irrigation.

The project consists in the formation of a reservoir across the Tuni or Thandava river, that would impound 8,000 million cubic feet of water capable of irrigating about 40,000 acres. The cost of the scheme was roughly estimated at Rs. 57 lakhs. Investigation made regarding the supply of water available for storage showed that in years of poor rainfall there would be no surplus flow in the river; in the year 1919—a year of good flow—there were only 2,333 million cubic feet to spare against 8,000 million cubic feet proposed to be impounded.

The net revenue anticipated from the scheme amounted to Rs. 1.70 lakhs, assuming a water-rate of Rs. 6 an acre on dry lands and an enhanced assessment of Rs. 3 per acre on the wet area commanded. This gave a return of only about 3 per cent on the estimated outlay of Rs. 57 lakhs.

The scheme has therefore been dropped (G.O. No. 188 I., dated 1st July 1922).

Godavari district.

No. 13 Coringa Island Extension Project.

It is proposed to extend Godavari delta irrigation to the island through the Bank Canal of the Eastern Delta which will be enlarged. The supply will be taken to the island through a syphon. The area that will be irrigated is 13,250 acres from which a net revenue of Rs. 56,071 was anticipated in 1916; this represented a return of $4\frac{1}{2}$ per cent on the then estimated capital cost of Rs. 4,69,300. The estimate is under revision by the Superintending Engineer and the estimate when revised will probably amount to Rs. $12\frac{1}{2}$ lakhs.

Remarks by the Chief Engineer for Irrigation.

According to the revenue forecast furnished by the Board of Revenue in 1919, the net area available for cultivation under the project comes to 12,525 acres and a net revenue of Rs. 59,031 was anticipated therefrom, assuming a water-rate of Rs. 6-4-0 and Rs. 3-2-0 per acre for a wet crop and a dry crop respectively. This gave a return of 12.6 per cent on the then estimated capital cost of Rs. 4,69,300.

As stated by the Special Officer, the estimate is under revision by the Superintending Engineer and will considerably exceed the original figure. The revenue forecast will also have to undergo a corresponding revision.

It is expected that 50 per cent of the irrigable area will be reached in 6 or 7 years, 75 per cent in fifteen years and the ultimate area in thirty years. Most of the lands being saline, water will have to be given free or at concession rates for the first few years; and with this condition, the project is not likely to pay.

No. 14 Polavaram Island Extension.

The project provides for extending irrigation in the Godavari Delta to the island of Polavaram formed by the branches of the Gowtami Godavari in the Amalapur taluk. This will be effected by taking water from the Bank Canal of the Central Delta across the Vridha Gowtami, at Annampalli lock, by means of an aqueduct. The area that it is proposed to bring under irrigation is 19,200 acres and the estimate, as finally revised in 1922, amounts to Rs. 18,69,200. The original net revenue forecasted was Rs. 62,730, which represents a return of about 3.4 per cent on the estimated capital cost, and is considerably below that necessary for the project to be classed as a productive one. The revenue forecast is now (May 1922) being reconsidered.

Remarks by the Chief Engineer for Irrigation.

The cost of the project, as finally revised by the Chief Engineer for Irrigation, comes to Rs. 18.55 lakhs.

According to the revised revenue forecast furnished by the Board of Revenue in 1922, the total irrigable area under the project is 16,316 acres from which a net revenue of Rs. 1,34,094 is anticipated, taking the water-rate at Rs. 9-6-0 an acre for a wet crop, which the ryots are said to be generally willing to pay.

More than one-half of the irrigable area is expected to be brought under cultivation within four or five years and the rest within fifteen years.

As it is found that the project can be classed as 'productive' only if the water cess can be increased to about Rs. 11-8-0 per acre, its further consideration is held over pending the passing of an Irrigation Law for the Presidency.

MAP
of the
GODAVARI DISTRICT
SCALE 16 MILES TO 1 INCH.



REFERENCE.

- SYSTEMS IN OPERATION. (solid red circle)
- PROJECTS UNDER INVESTIGATION. (hatched circle)
- PROJECTS FOR WHICH ESTIMATES
ARE UNDER CONSIDERATION. (dotted circle)
- IRRIGATED AREA. (green shaded area)

MAP of the KISTNA DISTRICT

SCALE 16 MILES TO 1 INCH.



REFERENCE.

- SYSTEMS IN OPERATION. ———— ●
- PROJECTS ABANDONED. ———— ○
- IRRIGATED AREA. ———— ■

Kistna district.*No. 15 Tammileru Reservoir.*

It is proposed to construct a dam across the Tammileru near the village of Vijayarayi to form a reservoir of 1,205 million cubic feet capacity primarily for the moderation of floods in the river. The approximate cost has been estimated to be Rs. 19.33 lakhs and an examination of the flood moderating effect of the reservoir has been made from which it was found that it would be practically nil in a flood of any intensity and duration. An irrigation scheme in connexion with the reservoir is not feasible as it would be necessary to store water during periods when the reservoir would have to be kept empty in the interests of flood moderation. There is also very little scope for extension of irrigation.

Remarks by the Chief Engineer for Irrigation.

As the Executive Engineer, Projects Division, was of opinion that a combined irrigation and flood moderating scheme is not possible, the Chief Engineer for Irrigation considered that no further investigation of the scheme is necessary and the papers have been recorded.

Kistna and Guntur districts.

No. 16 Kistna Reservoir.

The project as finally worked out by Colonel Ellis, R.E., provides for (i) a reservoir at Wadanapalle having a waterspread area of 122 square miles and a gross capacity of 163,586 millions cubic feet, (ii) an upland canal taking off direct from the reservoir to irrigate 610,000 acres in the Guntur district, and (iii) an extension of the distribution system in the Kistna delta under the Bezwada anicut to extend irrigation to 125,000 acres of long crop and 167,000 acres of a short late crop or second crop. Second crop irrigation in the Kistna delta is at present impossible owing to the irregularity and deficiency of water in the river after December. Plans and estimates amounting to Rs. 8.34 crores were prepared and submitted to the Government of India in September 1912 (vide G.O. Nos. 381-82 I., dated 19th September 1912) for sanction as a productive work. They were returned for revision with reference to the remarks of the Inspector-General of Irrigation (vide Government of India letter No. 1274 I., dated 15th August 1913). The revision of the estimate as suggested by the Inspector-General of Irrigation has for the present been deferred as it could not be carried out simultaneously with the Cauvery Reservoir Project which is the more promising of the two. In the meantime proposals are under consideration for installing, on the Bezwada anicut, six feet shutters of the Zifta weir type (vide G.O. No. 367 I., dated 30th July 1914). Owing to the war, these proposals had to be kept in abeyance but are now (May 1922) again under consideration.

Remarks by the Chief Engineer for Irrigation.

According to the financial forecast submitted to the Government of India in 1912, a net revenue of Rs. 49,92,453 was anticipated as shown below :—

| | Extent. ACS. | Assessment. RS. |
|--|-----------------|--------------------|
| (1) Enhanced assessment on wet land | 3,000 | 7,580 |
| (2) Water-rate on dry land at Rs. 7 per acre (excluding the revenue derived from the Colair lake) | 757,000 | 52,67,317 |
| (3) Dry assessment on unoccupied Government land at Rs. 2-7-0 an acre | 68,000 | 1,54,303 |
| (4) Second crop charge | 142,000 | 6,74,500 |
| (5) Interest on sale-proceeds of waste land ... | ... | 1,30,160 |
| Total ... | ... | 62,33,860 |
| <i>Deduct—</i> | | |
| Maintenance, collection and establishment charges | ... | 12,41,407 |
| Net revenue ... | ... | 49,92,453 |

This revenue gave a return of 5.98 per cent on the capital outlay.

It was expected that the project would be fully developed within five years after completion.

As regards the question of erecting six feet falling shutters referred to by the Special Officer, an estimate therefor, amounting to Rs. 4,95,000, is now under the consideration of the Chief Engineer for Irrigation.

MAP of the GUNTUR DISTRICT

SCALE 16 MILES TO 1 INCH.



REFERENCE.

- SYSTEMS IN OPERATION. ———— ●
- PROJECTS FOR WHICH ESTIMATES
ARE UNDER CONSIDERATION. } ———— ●
- IRRIGATED AREA ———— ■

Guntur district.

No. 17 Pratur Pumping Extension.

The scheme provides for the irrigation of about 10,768 acres in the Guntur district, the requisite supply of water being obtained by pumping from the Kistna river. The cost of the scheme was originally estimated at Rs. 11·60 lakhs and a return of 4·6 per cent was anticipated on the basis of a uniform water-rate of Rs. 10 an acre for first crop and Rs. 5 for second crop.

In May 1919, the Director of Agriculture (Mr. R. B. Wood) suggested that the project might be designed for the supply of water for the cultivation of garden crops, especially sugarcane, and that the cultivation of paddy under the scheme should be prohibited or prohibitive water-rate levied for its cultivation. The Board of Revenue agreed with the Director and stated that, as an experimental measure, the project should be designed for garden crop cultivation.

The Government then called upon the Director of Industries to examine the feasibility of carrying out the project as an industrial scheme and developing thereby the sugar industry, either as a Government concern or leaving it to private enterprise. The estimated cost of the scheme was about Rs. 19 lakhs, the water-rate required to make it productive being about Rs. 17-11-0 per acre on the area grown with paddy and Rs. 28 per acre for sugarcane.

The Director of Industries reported that private enterprise is not forthcoming to undertake the scheme and that Government could not take it up as the ryots would not come to terms as to the crop to be grown in the area. The Director of Agriculture (Mr. H. C. Sampson) also observed that "if the whole area under the scheme is to develop into a cane tract it must only be able to do so if the project is abandoned." The project has therefore been abandoned as an industrial scheme. The question whether the scheme is also to be given up as an irrigation scheme is separately under consideration.

Remarks by the Chief Engineer for Irrigation.

The proposal is to instal a pumping plant on the right bank of the river near Pratur and to irrigate about 10,000 acres of dry land in the Tenali and Guntur taluks. The cost of the scheme as roughly estimated in 1921 comes to about Rs. 19 lakhs.

It was originally expected that an extent of 3,000 acres out of the proposed ayacut would be cultivated with second crop. Subsequently, however, it was found that the estimate of the hot weather flow in the river was not altogether reliable and that even the proposed installation of higher shutters on the Bezwada anicut would not in any way improve the supply at Pratur. It was therefore considered advisable to limit the project to single crop irrigation, at least for the present.

The report of the Director of Agriculture (Mr. H. C. Sampson) shows conclusively that the prospects of growing sugarcane under the project are not bright. The financial aspect of the scheme has therefore to be considered solely on the basis of single crop cultivation of paddy on the whole area commanded, viz., 10,000 acres.

Assuming a water-rate of Rs. 10 per acre originally agreed to by the ryots, the net revenue anticipated from the scheme comes to Rs. 6,000 as shown below :—

| | RS. |
|---|----------|
| Gross revenue (at Rs. 10 per acre on 10,000 acres) | 1,00,000 |
| <i>Deduct—</i> | |
| Running charges of plant | 16,000 |
| Depreciation of plant | 63,000 |
| Maintenance charges at Re. 1 per acre | 10,000 |
| Collection charges at 5 per cent on gross revenue | 5,000 |
| Total ... | 94,000 |
| Net revenue ... | 6,000 |

This gives a return of only 0·3 per cent on the capital outlay and the scheme is thus not a paying one at all. The project will therefore have to be abandoned as an irrigation scheme also.

Kurnool district.

No. 18 Duvvaleru anicut.

It is proposed to construct an anicut across the Duvvaleru stream, a tributary of the Gundlakamma river, and to excavate a channel from it to feed a chain of existing tanks and incidentally irrigate certain lands directly commanded by the supply channel. Besides providing for the existing irrigation of 474 acres under the tanks, the project contemplates an extension of irrigation of 534 acres and 190 acres under the supply channel. The cost of the project was estimated in 1917 to be Rs. 1.05 lakhs. The detailed investigation of the project was sanctioned in G.O. No. 212 I., dated 20th July 1920, and is now in progress (May 1922).

Remarks by the Chief Engineer for Irrigation.

According to the forecast furnished by the Board of Revenue in 1920, a net revenue of Rs. 5,797 was anticipated. The water-rate proposed was Rs. 8 and Rs. 4 per acre for a wet crop and a dry crop respectively on dry lands irrigable by the project.

No. 19 Gazuladinne reservoir.

The project is for constructing a reservoir on the Hindri river near the village of Gazuladinne in Pattikonda taluk to irrigate 11,958 acres of wet cultivation in 13 villages of that taluk. The capital outlay is estimated at Rs. 13.33 lakhs and the net revenue at Rs. 29,170, representing a return of 2.18 per cent on the outlay.

The project was submitted to the Government of India in September 1905 for sanction as a famine protective work but it was returned with the suggestion that it might lie over until the Tungabhadra project was considered by them. The consideration of the Tungabhadra project having since been indefinitely postponed with the concurrence of India, this project was again taken up, and it was decided that it should lie over until the results of the Venkatapuram project are seen—vide G.O. No. 27 I., dated 8th January 1913. The Venkatapuram project is now in operation.

Remarks by the Chief Engineer for Irrigation.

As the population of the tract commanded by the project was sparse and the ryots were not keen in the matter of irrigating their lands, the Collector was of opinion that it is hopeless to expect a very large conversion of existing dry holdings into wet and that the project is not likely to be a financial success. He also considered that the scheme might be postponed for at least ten years and taken up again if in the meantime the other projects in the region proved a success and population increased and people became aware of the advantages of irrigation. In view of the Collector's opinion and the reported attitude of the ryots with regard to the Venkatapuram project, the Chief Engineer for Irrigation recommended that further investigation of the project be deferred, which was approved by Government.

The Venkatapuram tank which has been in operation for the last six years has not proved a success so far, the maximum area irrigated in any one year being 230 acres in 1920–21 as against an area of 1,700 acres anticipated at the time the work was sanctioned.

No. 20 Gudempad reservoir.

The scheme provides for the formation of a reservoir at the junction of two streams called Chityala vagu and Yerragudi vagu near Gudempad, a hamlet of Kambalapad in Ramallakotta taluk, to hold 1,000 million cubic feet. The ayacut proposed is 4,000 acres of light red and black sandy soils. The cost of the project was estimated to be Rs. 5,58,000 and the net revenue at Rs. 12,000 equivalent to a return of 2.15 per cent on the outlay. When revised, at current rates, the estimate will probably be doubled. The project was ordered to lie over pending the completion of the Venkatapuram and Kocheruvu projects. These latter projects are now in operation.

Remarks by the Chief Engineer for Irrigation.

The cost of the scheme, as revised by the Chief Engineer for Irrigation in 1912, amounted to Rs. 8.16 lakhs. The net revenue anticipated, according to the Board's forecast, was Rs. 20,370 assuming a differential water-rate of about Rs. 6–12–0 per acre on the average. This gave a return of 2.5 per cent on the capital outlay.

The project was ordered to be kept in abeyance until some experience was gained with the Kocheruvu and the Venkatapuram projects, and the Superintending Engineer was asked to continue collecting rainfall statistics in order to ascertain the protective value of the project in a bad year (G.O. No. 95 I., dated 7th March 1912).

Gauge readings have since been ordered to be discontinued, as the project has very little chance of being carried out.

No. 21 Krishnapuram tank.

This project provides for the construction of a tank by bunding the Kurnur Pantulu vagu above Krishnapuram in Pattikonda taluk and diverting into it the Pedda vagu of Machapuram to command 750 acres. The project is estimated to cost 2.13 lakhs and yield a net revenue of Rs. 3,009, representing a return of 1.41 per cent on the total cost. Ordered to lie over pending the completion of the Venkatapuram and Kocheruvu projects which are now in operation (G.O. No. 27 I., dated 8th January 1913). Has to be considered together with No. 19 (Gazuladinne reservoir).

Remarks by the Chief Engineer for Irrigation.

The tank was designed to hold 138 million cubic feet of water. It was expected that with a favourable north-east monsoon the tank would fill more than once.

In working out the revenue forecast, the Board of Revenue assumed a differential water-rate of about Rs. 4–14–0 (on the average) per acre on 744 acres of Government and minor inam dry lands.

MAP
of the
KURNOOL DISTRICT.

SCALE 16 MILES TO 1 INCH.



REFERENCE.

- SYSTEMS IN OPERATION. (red dot)
- PROJECTS UNDER INVESTIGATION. (hatched dot)
- PROJECTS FOR WHICH ESTIMATES
ARE UNDER CONSIDERATION. (blue dot)
- PROJECTS IN ABEYANCE PENDING VERIFICATION
OF WATER SUPPLIES OR PENDING A DECISION
BEING COME TO ON OTHER SCHEMES OR FOR
OTHER REASONS. (blue dot)
- IRRIGATED AREA. (brown shaded area)

The scheme is dependent for its supply on the Gazuladinne project (No. 19) and hence has to be taken up for consideration along with it.

No. 22 Ouk reservoir.

The project provides for forming a reservoir across the Uppiluru to hold 603.5 million cubic feet and for excavating a channel therefrom to a length of 69 miles. The channel is proposed to be carried under the Kurnool-Cuddapah canal by means of a syphon and across the Kunderu by means of an aqueduct. The extent proposed to be irrigated is 25,000 acres of single crop and 12,500 of second crop and 9,000 of dry crop. The scheme was estimated to cost Rs. 40.30 lakhs in 1905. The plans and estimates were kept back pending the result of the investigation of the Tungabhadra project. It will have now to be decided on its own merits, considering the question of supplies available for this project after meeting the requirements of Velgode and Kurnool-Cuddapah extensions which appear to be more promising.

No. 23 Thokapalle reservoir.

This project which has been under consideration since the year 1892 is for the construction of a dam across the Thigaleru in a gap in the hills just above the village of Thokapalle, Markapur taluk. The Superintending Engineer, III Circle, in July 1919, submitted an estimate, amounting to Rs. 12 lakhs, for the construction of an earthen bund to store 2,000 million cubic feet and the necessary distributary works to irrigate 8,000 acres. The plans and estimate were returned to the Superintending Engineer for revision, and in November 1920 he resubmitted the estimate revised to Rs. 16 lakhs, the anticipated return on which was 2.41 per cent for rates of assessment appropriate to the different classes of land to be irrigated or 3.8 per cent at a flat rate of Rs. 10 per acre. The Superintending Engineer doubted whether there was sufficient water available for the ayacut proposed, and the question was gone into by the Executive Engineer, Projects Division, who recommended that the ayacut and the capacity of the reservoir be reduced to 4,600 acres and 1,500 million cubic feet respectively. The estimated cost as revised in the Projects division is Rs. 17 lakhs for the reduced capacity and ayacut. The revenue forecast is under consideration (May 1922).

Remarks by the Chief Engineer for Irrigation.

The figures of run-off from rainfall, worked out by the Executive Engineer, Projects Division, show that an area of 5,500 acres can be irrigated when the rain-fall is normal. Excluding the existing irrigated area of about 500 acres in the catchment, the additional ayacut indicated is therefore 5,000 acres. To be on the safe side, the Executive Engineer has proposed that the ayacut may be taken as 4,600 acres of which, it is expected, one-third on an average would be second-cropped. Though the effective capacity of reservoir required for the ayacut is only 1,000 million cubic feet, the Executive Engineer recommends the adoption of a capacity of 1,500 million cubic feet as the latter is found cheaper and will also effect an extra second crop in some years.

The estimate is under the consideration of the Chief Engineer for Irrigation and a revised revenue forecast on the basis of the proposals of the Executive Engineer, Projects Division, has been called for from the Board of Revenue.

No. 24 Tippayapalem reservoir.

This is a proposal to form a reservoir across the Rolla vagu near the Tippayapalem village for the irrigation of about 2,000 acres. The scheme is under investigation by the Superintending Engineer, III Circle.

Remarks by the Chief Engineer for Irrigation.

The Superintending Engineer has since submitted an approximate estimate for the project amounting to Rs. 2.89 lakhs.

The capacity of the proposed reservoir is 183 million cubic feet. The supply available for storage is, according to the Superintending Engineer's computation, sufficient for the irrigation of about 1,500 acres of first crop and 300 acres of second crop.

The Collector reported in 1918 that the ryots owning the lands commanded by the project were willing to pay a water-rate of Rs. 10 per acre, and that they had recorded statements to that effect; and according to the forecast furnished by him, the anticipated net revenue comes to Rs. 12,500, which gives a return of about 4.3 per cent on the estimated capital outlay of Rupees 2.89 lakhs.

The estimate is under scrutiny by the Chief Engineer for Irrigation.

No. 25 Velgode reservoir and Kurnool-Cuddapah canal improvements.

The proposal is to widen the Kurnool-Cuddapah canal and to excavate a channel 56 miles long from near the Mittakondala cutting and to form a reservoir for the irrigation of 46,100 acres of first crop and 15,000 acres of second crop. The cost of the project at present rates will be over one crore of rupees. It has not yet been possible to frame a reliable estimate of the cost of the widening of the canal which is a very difficult problem.

Remarks by the Chief Engineer for Irrigation.

According to the forecast prepared by the Board of Revenue in 1911, the net revenue anticipated from the project was Rs. 3,15,124 or Rs. 2,58,815 according as differential water-rates or fixed water-rates were adopted.

It was expected that the ultimate irrigable area would be reached in 20 years from the commencement of irrigation.

The estimate is under the consideration of the Chief Engineer for Irrigation.

Cuddapah district.

No. 26 Papaghni reservoir.

It is proposed to form a reservoir on the Papagni river, a tributary of the Penner, by constructing a masonry dam near the village of Velligallu where the river passes through a narrow gorge. The proposal is to irrigate, by means of channels taking off from this reservoir an extent of 10,000 acres of wet crop and 17,300 acres of dry crop. The scheme is estimated to cost Rs. 42.08 lakhs and to bring in a net revenue of Rs. 95,790 equivalent to a return of 2 per cent on the outlay—vide G.O. No. 1222 I., dated 11th December 1905.

A preliminary report on the scheme was submitted but it did not justify the complete investigation of the project. Gauging observations are, however, being made to ascertain whether the scheme is worth further investigation.

Owing to a misunderstanding the gauges erected were not read after 1907. Orders have been issued to read the gauges from this year (1922). The cost of the project at present rates is not likely to be less than Rs. 70 lakhs and there is very little chance of its being financially feasible.

Remarks by the Chief Engineer for Irrigation.

The reservoir was designed to hold 6,000 million cubic feet representing a run-off of nearly 4 inches from the catchment in a moderately bad year.

The estimated cost of Rs. 42.08 lakhs was that based on the preliminary investigation of the scheme in 1905.

The net revenue of Rs. 95,790 was arrived at by the Special Superintending Engineer assuming a water-rate of Rs. 6 per acre for double crop wet and Rs. 4 per acre for single crop wet or irrigated dry crop.

No. 27 Pullampet reservoir.

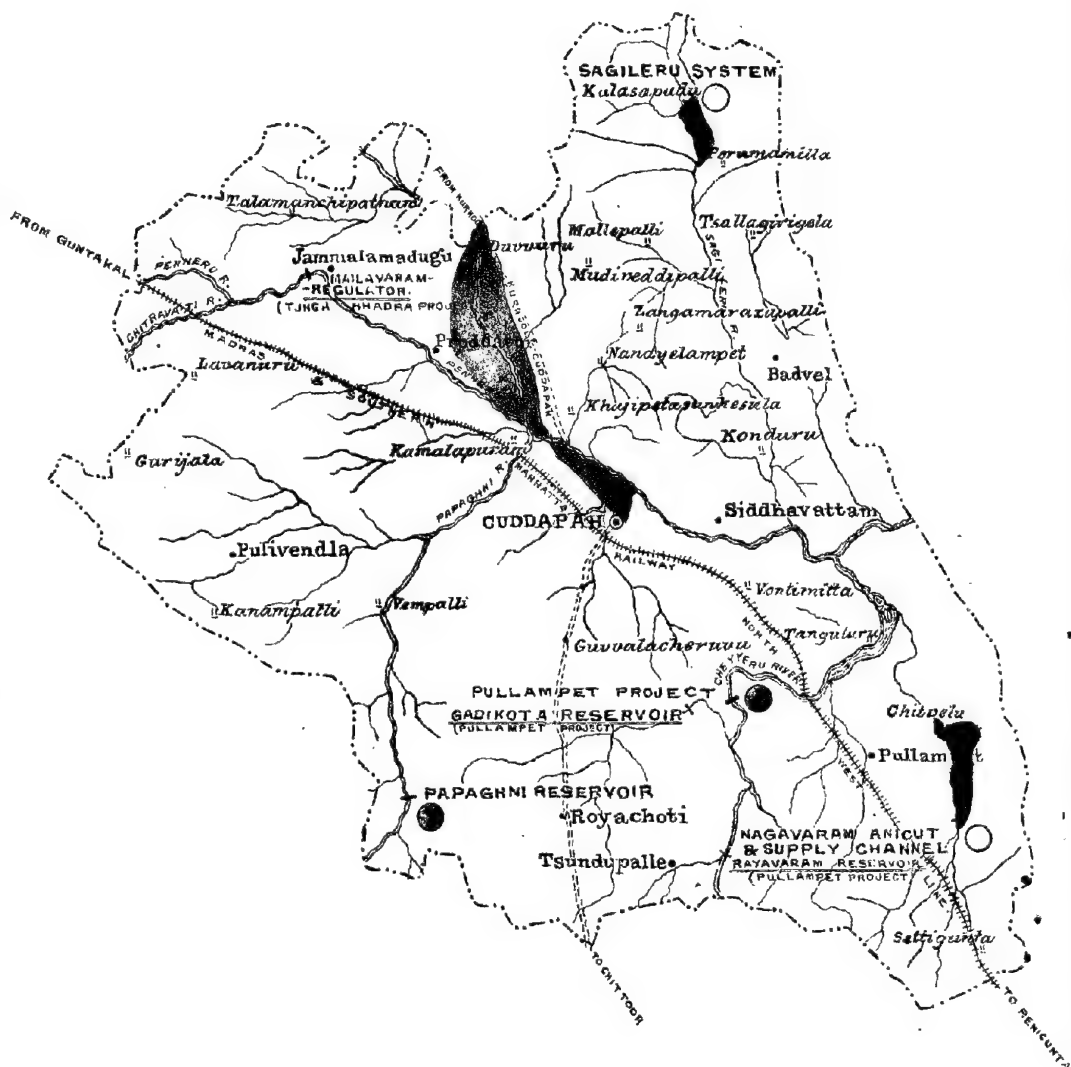
It is proposed to form two reservoirs, one by constructing a masonry dam across a gorge at Rayavaram in the Palkonda hills, to intercept the water in the Pinchanadi and Bahuda, tributaries of the Cheyyer and the other by damming the Mandavayanadhi, another tributary of the Cheyyer, at Verapally or at Gandikota. Water will be passed down the Cheyyer from the two reservoirs and picked up by an anicut to be built at Bardinnagedda. The water will then be passed through a tunnel 1,500 feet long to irrigate land in Pullampet taluk. A preliminary report on the scheme was submitted but it did not justify the detailed investigation of the project. Gauges in the rivers had been read for some years past to see whether a detailed investigation of the project is warranted. The project is expected to be capable of irrigating 70,000 acres of the 150,000 acres it would command and a rough estimate of the cost made in the year 1905 was Rs. 66.3 lakhs from which a return of 3.51 per cent was expected. The readings of the gauges in the rivers have now been obtained for a sufficient number of years for a decision to be come to on the project.

Remarks by the Chief Engineer for Irrigation.

The anticipated net revenue of Rs. 2,31,000 was arrived at by the Special Superintending Engineer in 1905 adopting a water-rate of Rs. 4 per acre on the average.

MAP of the CUDDAPAH DISTRICT

SCALE 16 MILES TO 1 INCH.

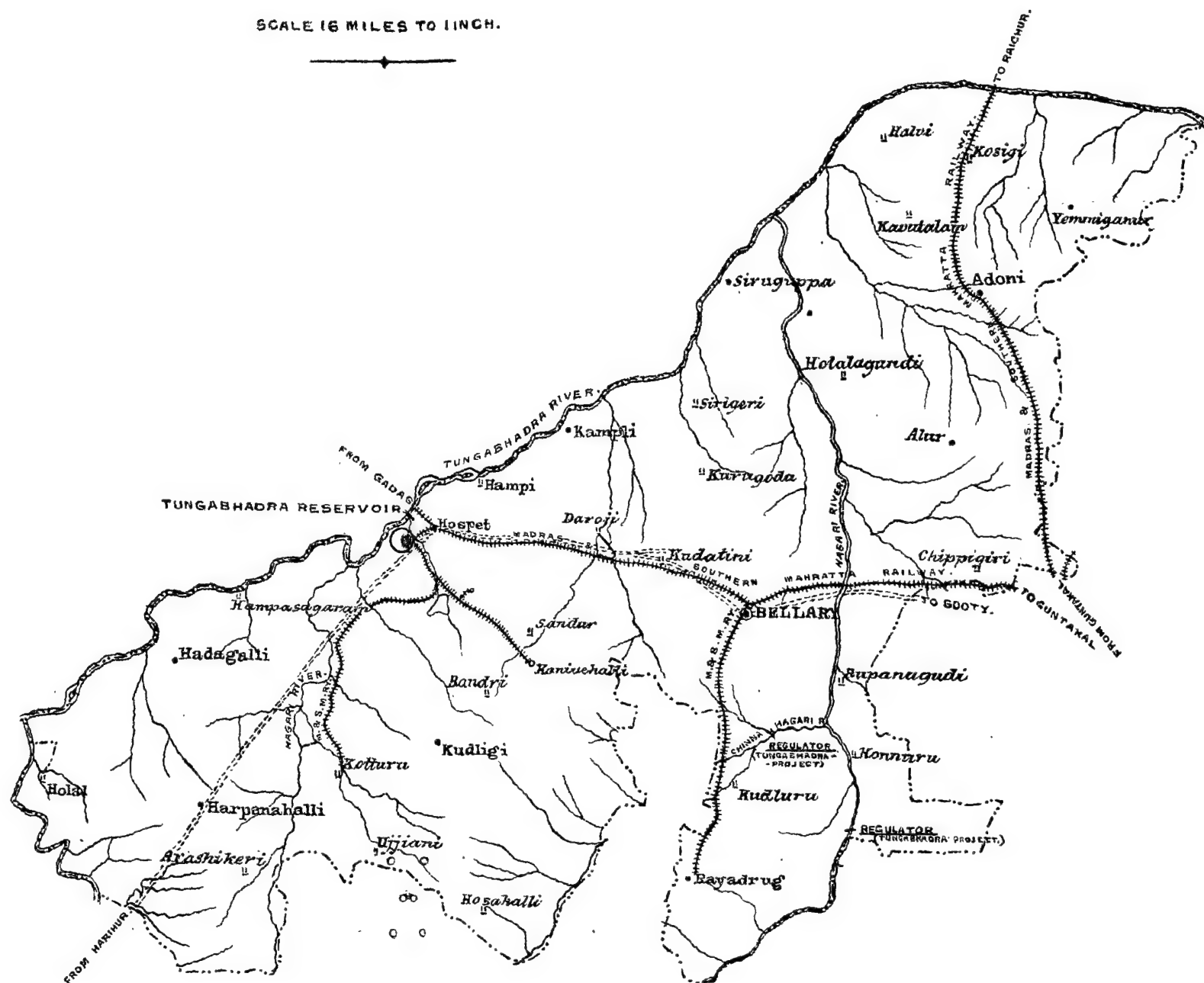


REFERENCE.

- SYSTEMS IN OPERATION. (Symbol: Circle with a dot)
- PROJECTS IN ABEYANCE PENDING VERIFICATION
OF WATER SUPPLIES OR PENDING A DECISION
BEING COME TO ON OTHER SCHEMES OR FOR
OTHER REASONS. (Symbol: Circle with a solid black center)
- IRRIGATED AREA. (Symbol: Dashed line)

MAP
of the
BELLARY DISTRICT

SCALE 16 MILES TO INCH.



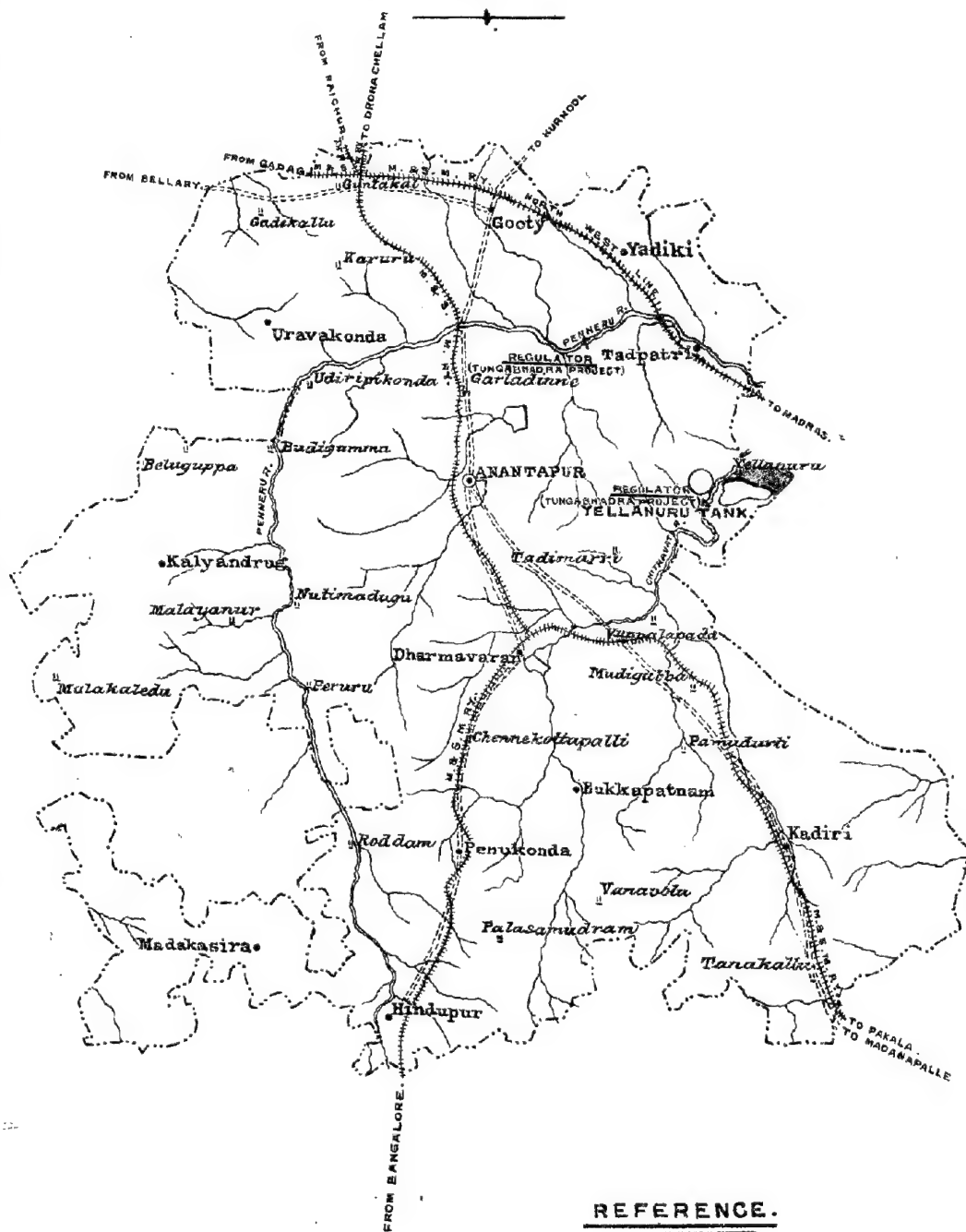
REFERENCE.

PROJECTS IN ABEYANCE PENDING VERIFICATION
OF WATER SUPPLIES OR PENDING A DECISION
BEING COME TO ON OTHER SCHEMES OR FOR
OTHER REASONS.

PREPARED BY P. S. SUNDARAJU.

MAP of the ANANTAPUR DISTRICT

SCALE 16 MILES TO 1 INCH.



REFERENCE.

SYSTEMS IN OPERATION. --- ○ ---
IRRIGATED AREA. ---

Bellary, Anantapur, Kurnool, Cuddapah and Nellore districts.

No. 28 Tungabhadra reservoir project.

The proposal was to construct a reservoir across the Tungabhadra, 3 miles above Hospet, with a capacity of 120,683 million cubic feet to irrigate about 961,800 acres of wet crop and protect 1,000,000 acres of dry crop. The object was to give a large measure of protection to the five districts affected, which suffer severely in seasons of drought. The cost of the project was estimated at Rs. 12.18 crores. The plans and estimates were submitted to the Government of India in August 1905 (vide G.O. Nos. 726-27-I., dated 12th August 1905), but they were returned with the Government of India's letter No. 816 I., dated 12th June 1906, for revision on the lines indicated by the Inspector-General of Irrigation (vide pages 3-6 of G.O. No. 423 I., dated 2nd October 1909). A revised project was accordingly prepared the cost of which was estimated at 13 crores of rupees; but as a return of only 2.59 per cent was expected from the project and as it was considered that the Cauvery and Kistna reservoir projects which are likely to prove more productive should be given precedence, it has been decided in G.O. No. 423 I., dated 2nd October 1909, that the Tungabhadra project should be indefinitely postponed. This decision has been accepted by the Government of India (vide G.O. No. 253 I., dated 1st August 1910).

Remarks by the Chief Engineer for Irrigation.

The net revenue anticipated from the project was Rs. 33.65 lakhs as shown below :—

| | ACS. | RS. |
|--|---------|----------------------|
| Revenue from irrigation of first crop wet at Rs. 5-8-0 per acre. | 342,439 | 18,83,415 |
| Revenue from irrigation of second crop wet at Rs. 3-4-0 per acre. | 28,537 | 92,745 |
| Revenue from irrigation of first crop dry at Rs. 4 per acre. | 125,561 | 5,02,244 |
| Revenue from irrigation of second crop dry at Rs. 2 per acre. | 57,074 | 1,14,148 |
| Revenue from irrigation of dry protected crop at Rs. 4 per acre. | 250,000 | 10,00,000 |
| Total revenue ... | | <hr/> 35,92,552 |
| <i>Add—</i> | | |
| Revenue from sale-proceeds of tank-bed lands, etc. ... | ... | 3,74,000 |
| Total ... | | <hr/> 39,66,552 |
| <i>Deduct—</i> | | |
| Maintenance charges, etc. ... | ... | 6,01,000 |
| Net revenue ... | | <hr/> 33,65,552 |
| | | (or say 33.65 lakhs) |

The project is shelved for the present.

Nellore district.

No. 29 Atleru reservoir.

The project consists of the formation of a reservoir by constructing a bund across the Atleru, a tributary of the Musi river, about three miles above their junction in the north-western portion of the Kandukur taluk. The tank-bund will be formed of earth connecting the high ground on the left and right of the river, the former of which forms the ridge between the Musi and the Atleru. The reservoir will have a capacity of 901 millions cubic feet and the supply available is estimated to be sufficient to irrigate an average area of 3,000 acres. The project is also expected to improve the water-supply to 152 acres already classed as wet under the Kondapi tank. The estimate for the scheme as framed by the Chief Engineer for Irrigation in 1911 amounted to Rs. 5.5 lakhs. The net revenue anticipated was Rs. 26,386 equivalent to a return of 4.80 per cent on the capital outlay. The project is kept in abeyance pending the result of gaugings of the river (G.O. No. 29 I., dated 8th January 1913).

Remarks by the Chief Engineer for Irrigation.

In addition to the 3,000 acres of first crop, mentioned by the Special Officer, an extent of 1,060 acres of second crop was also expected to be irrigated. The anticipated net revenue of Rs. 26,386 was arrived at assuming a water-rate of Rs. 8 and Rs. 5-11-0 per acre for first and second crop respectively.

An alternative proposal to construct a reservoir to hold 1,314 million cubic feet, capable of irrigating on an average 5,252 acres of first crop was also worked out by the Chief Engineer for Irrigation. This was estimated to cost about Rs. 8.4 lakhs and was expected to yield a net revenue of Rs. 36,085 representing a return of 4.29 per cent.

The Board of Revenue recommended the detailed investigation of the larger scheme. The Chief Engineer for Irrigation, however, had grave doubts whether the supply of water available for storage had not been overestimated and examined the question further with reference to the gaugings of the river for the years 1909, 1910 and 1911 and the rainfall gaugings for the previous 20 years. The gaugings of 1909, a year of moderate defect showed that the project would have proved a failure in the years 1899, 1900, 1904, 1905, 1907 and 1909. It has therefore been decided that, before a detailed investigation of the scheme is ordered, the result of the gaugings of the river in a year when the annual rainfall does not exceed 20 inches should be examined. The project is accordingly kept in abeyance.

No. 30 Gandipalem reservoir.

The project provides for the restoration of the ruined Gandipalem tank on the Bellaperu, an affluent of the Mannuru, for the irrigation of 13,543 acres of dry crop. The work is estimated to cost Rs. 13.31 lakhs and to yield a net revenue of Rs. 43,884 equivalent to 3.26 per cent on the capital outlay. Plans and estimates are ordered to lie over until the results of the Mopad and Vengalapuram projects are known (vide G.O. No. 1322 I., dated 25th November 1904). The river is being gauged to determine the probable supplies the project would receive. The project has to be considered in conjunction with Nos. 32 and 33 (Rallapad and Mopad and Machavaram) as there will only be sufficient water for one of the three schemes. Mopad project is in operation and Vengalapuram project estimate is under revision. When a decision is come to on the latter project the three schemes will be examined and the most promising one revised in detail. The probable cost of the project at present rates is Rs. 21 lakhs.

Remarks by the Chief Engineer for irrigation.

The proposed capacity of the reservoir is 1,634 million cubic feet representing a run-off of 3½ inches from the whole catchment.

The Board of Revenue was of opinion, that 3 per cent is about the maximum return which could be safely reckoned upon on the estimated capital outlay of Rs. 13.31 lakhs.

It was expected that the project would be fully developed in 11 years after completion.

The scheme is an alternative to the Rallapad (No. 32 below) and the Mopad and Machavaram (No. 33 below) projects, as only one of these three schemes can be carried out with the available supply of water.

No. 31 Pulikonda reservoir.

The proposal is to form a reservoir across the Musi at Pulikonda, a village situated some 18 miles west of Ongole. The reservoir is designed to have a storage capacity of 2,518 million cubic feet sufficient to irrigate an area of over 10,000 acres. The net increase of revenue derivable from the work is estimated at Rs. 44,281 representing a return of 2.33 per cent on the capital outlay of Rs. 19.03 lakhs. The area benefited is reported to be subject to scarcity. In G.O. No. 948 I., dated 4th October 1905, it was ordered that the project should lie over until final orders are passed on the Kistna reservoir project. As the Kistna reservoir project as finally revised does not extend to the south of the Gundlakamma river, this project will have now to be considered on its

MAP of the NELLORE DISTRICT

SCALE 16 MILES TO 1 INCH



REFERENCE

SYSTEMS IN OPERATION.

PROJECTS FOR WHICH ESTIMATES
ARE UNDER CONSIDERATION.

PROJECTS IN ABEYANCE PENDING VERIFICATION
OF WATER SUPPLIES OR PENDING A DECISION
BEING COME TO ON OTHER SCHEMES OR FOR
OTHER REASONS.

IRRIGATED AREA.

PREPARED BY P. RUDRAH RAJU.

own merits. Gaugings were also taken to ascertain the supply of water available. Sufficient data are now available and the further examination of the scheme will be taken up in due course (vide G.O. Mis. No. 256 I., dated 22nd May 1915).

Current meter gaugings of the Musi at Pulikonda will be made in 1922 to calibrate one of the gauges in the river that have been read for some years past.

Remarks by the Chief Engineer for Irrigation.

The project was estimated for in 1905.

The storage capacity of the reservoir, viz., 2,518 million cubic feet, represents a run-off of 2.12 inches from the catchment out of an estimated mean annual run-off of 4.52 inches. The Special Chief Engineer (Mr. J. P. Davidson) was of opinion that the reservoir would fill every year except in exceptionally bad years.

The project is designed for the irrigation of a single wet crop on 10,310 acres of dry land.

In working out the revenue derivable from the project the Board of Revenue adopted a water-rate of about Rs. 5 per acre, on the average, on ryotwari and minor inam dry lands and Rs. 4 per acre on zamindari lands.

It was anticipated that the whole irrigable area would be brought under irrigation at the end of the eighteenth year after completion of the project.

The Chief Engineer for Irrigation (Mr. A. H. Garrett) considered that the protective value of the project was doubtful as it was likely to fail in years of scarcity but that if the Kistna reservoir project were sanctioned a supply to the Pulikonda reservoir could be guaranteed in the worst seasons. The project was accordingly kept in abeyance pending final orders on the Kistna reservoir project. As it has since been proposed to consider the scheme on its own merits, gauge-readings are being taken to ascertain the supply available.

No. 32 Rallapad reservoir.

This project provides for forming a reservoir on the Mannernu, near Rallapad, 20 miles below the site of the Mopad reservoir to irrigate 13,563 acres of wet crop by a channel 13 miles long taking off from the right flank of the reservoir. The project was estimated to cost Rs. 15.86 lakhs and the net revenue anticipated was Rs. 44,994. The estimates for this project were submitted to the Government of India with letter No. 829 I., dated 31st July 1906. They were returned by that Government with a note by the Inspector-General of Irrigation suggesting that the ayacuts of both this and Mopad projects be combined. Accordingly when the Mopad project was designed for the irrigation of 37,000 acres of dry crops, the tract commanded by this project was also included. As the Mopad project has subsequently been sanctioned for the irrigation of 12,500 acres of wet cultivation, this project will be taken up for re-examination in conjunction with Nos. 30 and 33 when a decision is come to on the Vengalapuram project—see note on No. 30 (Gandipalem reservoir). The probable cost of the project at present rates is Rs. 25 lakhs.

Remarks by the Chief Engineer for Irrigation.

The capacity of the proposed reservoir is 3,569 million cubic feet equivalent to a run-off of 3.70 inches from its free catchment basin of 415 square miles and sufficient for irrigation of a single wet crop on 13,235 acres of dry land. It would also improve the supply of water to 328 acres of wet land under the Syapet tank. The cost of the scheme, as estimated in 1906, amounted to Rs. 17.73 lakhs, and the net revenue to Rs. 52,819 giving a return of 2.9 per cent.

In working out the revenue forecast, the Board of Revenue adopted a water-rate of Rupees 5-3-0 per acre on the average on the Government and minor inam lands and Rs. 4 per acre on zamindari lands.

It was expected that the ultimate irrigable area would be reached at the end of the nineteenth year after completion of the project.

The scheme is an alternative to the Gandipalem project (No. 30) and the Mopad-Machavaram project (No. 33 below) and, as stated by the Special Officer, has to be considered along with them.

No. 33 Supply channel to Mopad and Machavaram tanks.

The project provides for the construction of an anicut across the Mannernu river near Viragnavunikata and the excavation of a channel from above the anicut to supply the Machavaram tank and through it the adjoining Mopad (Kandukur taluk) tank. It is also proposed to dig a new channel from the Machavaram tank for direct irrigation as well as for the supply of the tanks of Bingnapalli and Pakala near the coast. The project was estimated to cost Rs. 7,28,000 in 1901, from which a return of 2.47 per cent was anticipated. This project is an alternative one to Nos. 30 and 32 (Gandipalem and Rallapad reservoir projects).

Remarks by the Chief Engineer for Irrigation.

The project, as designed in 1901, provides for increasing the storage of the tanks by 775 million cubic feet and it was proposed to bring under cultivation an area of 1,200 acres of existing ayacut and to extend irrigation to an extra ayacut of 4,000 acres.

Assuming a water-rate of Rs. 4 per acre, a net revenue of about Rs. 18,000 was expected or a return of 2.47 per cent on the capital outlay of Rs. 7.28 lakhs (as estimated by the Superintending Engineer in 1901).

The scheme has to be examined along with the Gandipalem (No. 30) and the Rallapad (No. 32) projects.

No. 34 Vengalapuram reservoir.

The proposal is to form a reservoir of 2,550 million cubic feet capacity by damming the Paleru at Pedda Alavalapad and to construct a pick-up anicut across the same river 7 miles lower down at Chinipad. Another anicut will be constructed across the Makeru above the confluence of this river with the Paleru, and will be connected by a leading channel from the former anicut. The main channel will take off from the Makeru anicut for the irrigation of 16,500 acres of wet crop in the Kandukur taluk. The capital cost of the project is estimated at Rs. 34 lakhs including direct and indirect charges and the net revenue at Rs. 1,02,795 representing a return of 3 per cent. The estimate was being revised by the Projects division and revision is being carried on in the Office of the Chief Engineer for Irrigation.

Remarks by the Chief Engineer for Irrigation.

The supply available for storage is computed at 3,000 million cubic feet against the capacity of 2,550 million cubic feet proposed for the reservoir.

The estimate of Rs. 34 lakhs was that prepared in 1916. The net revenue of Rs. 1,02,795 was arrived at by the Chief Engineer for Irrigation assuming a water-rate of about Rs. 6-4-0 per acre on the average.

In 1918 the Director of Agriculture was requested to negotiate with the ryots and to ascertain whether in case the scheme is carried out, they would be prepared to pay a water-rate of Rs. 12-8-0 per acre, which was the rate required to make the project productive on the basis of the estimated cost of Rs. 34 lakhs. The report of the Director showed that the ryots of only 17 out of 31 villages concerned were willing to pay the above rate. It was thereupon decided that the further consideration of the scheme should be deferred till the general question of the policy of water-rate assessment is settled.

The estimate for the project is, as stated by the Special Officer, being revised by the Chief Engineer for Irrigation with reference to the present rate, etc., and is likely to cost about Rs. 50.60 lakhs.

The financial aspect of the scheme also yet remains to be considered.

MAP of the CHINGLEPUT DISTRICT

SCALE 16 MILES TO 1 INCH.



REFERENCE.

- SYSTEMS IN OPERATION ———— (solid line with a red circle)
- PROJECTS UNDER INVESTIGATION ———— (dashed line with a red circle)
- IRRIGATED AREA ———— (shaded area)

Chingleput district.

No. 35 Madurantakam tank improvements.

This is a proposal to utilize the surplus of the large and important Madurantakam tank to supplement the existing supply to about 50 tanks in the neighbourhood. This tank already irrigates an area of 2,842 acres of first crop and 1,275 acres of second crop. There is a large number of tanks supplied directly and indirectly by the above tank and the total existing ayacut under the whole system is 5,825 acres of first crop and 1,553 acres of second crop. The total cost of the scheme was estimated in 1906 at Rs. 4·80 lakhs and the net return expected was Rs. 4,800 or 1·00 per cent on the capital outlay. The project was kept in abeyance pending orders being passed on the Uttaramerur project and as the latter project has been abandoned, this project is now being reconsidered as a famine relief work.

Remarks by the Chief Engineer for Irrigation.

In calculating the financial aspects of the scheme, the water-rate for the new area to be brought under irrigation was taken as Rs. 4 per acre, and the savings of remissions on 680 acres that would be protected by the project was taken at Rs. 5 per acre. This worked out to 1·00 per cent on the total cost of Rs. 4,80,000 as estimated in the year 1906.

South Arcot district.

No. 36 Maninadhi reservoir.

The Collector in 1921 suggested the formation of a reservoir on the Maninadhi by constructing a dam across it where it issues from the Kalrayan Hills near Pudupalaypatti. The catchment area above the site of the dam is 39 square miles. There are no rainfall stations in the catchment. The Executive Engineer, Projects division, reported after inspection that the site for the dam was a good and probably cheap one, but that the cost of acquiring the land that would be submerged would be high and probably kill the project. A large area of existing irrigation is affected by the project and the Executive Engineer recommended that statistics of existing irrigation and supplies in the river be collected before any further investigation of the site for the dam be made.

No. 37 Muktanadhi reservoir.

The Collector in 1921 suggested the formation of a reservoir on the Muktanadhi by constructing a dam across it where it issues from the Kalrayan Hills. The catchment area above the site is 13 square miles and there are no rainfall stations in it. The site for the dam at the village of Mattapara was inspected by the Executive Engineer, Projects division, who reported that the site was suitable for the construction of a dam but that without borings or pits, it was not possible to say whether an earthen or masonry dam would be the cheaper but that unless snags were revealed the cost of constructing the dam should be moderate. As in the case of the Maninadhi project (No. 36) there are complications with old irrigation below and the Executive Engineer made the same recommendations as in the case of that project.

Remarks by the Chief Engineer for Irrigation.

No. 36, Maninadhi reservoir.—It was roughly estimated that 308 million cubic feet of surplus water would be available for storage in a normal year, and that the possible extensions of irrigation if this figure is correct, was estimated to be 1,500 acres at the most and assuming that a water-rate of Rs. 10 per acre were levied, the net return would be Rs. 8-4-0 per acre, and the net revenue from the full ayacut would then be Rs. 12,600. Allowing for failure and partial failures of the supply for new irrigation, not more than 85 per cent of the full revenue can be reckoned on, i.e., Rs. 10,710, or say Rs. 11,000. If a 5 per cent return on the capital cost is required the revenue of Rs. 11,000 would only justify an expenditure of Rs. 2·2 lakhs and it was estimated that the acquisition of land in the reservoir bed itself would cost this amount. The Collector who was consulted also stated that the project was bound to be expensive, though the cost of the acquisition of the land will not be more than Rs. 100 per acre.

No. 37, Muktanadhi reservoir.—The capacity of the reservoir was estimated at about 250 million cubic feet and the permissible outlay arrived at according to the calculations in the previous paragraph would be Rs. 1·14 lakhs and it is stated by the Executive Engineer, Projects Division, that even the head works could not be constructed for the 1·14 lakhs.

As these projects were thus not expected to be financially successful, orders postponing the further investigation of the projects and ordering the collection of statistics of revenue, etc., and rainfall as recommended by the Executive Engineer, Projects Division, and the Collector of South Arcot have been issued in G.O. No. 262 I., dated 30th October 1922.

No. 38 Reclamation of Kaliveli swamp.

In 1914 the Collector of South Arcot district suggested that a portion of the Kaliveli swamp in Tindivanam taluk be reclaimed and made available for agricultural purposes. In 1916 the Superintending Engineer, VII Circle, submitted a preliminary report on a scheme for improving the drainage from the swamp by excavating a cut direct to the sea and constructing a regulator across it at the Merkanam-Pondicherry road. This scheme was estimated to cost Rs. 2½ lakhs and it was anticipated that 8,600 acres of the swamp above mean sea level would be reclaimed. The Chief Engineer for Irrigation returned the plans and estimates for the scheme to the Superintending Engineer with remarks on certain points and after further investigation the Superintending Engineer, in August 1918, reported that his previous proposal for the new cut should be given up as the outlet of the cut was certain to close. He, however, put forward a new scheme for reclaiming a portion of the swamp on the south-west, above level 0·00, by constructing flood banks, and irrigating about 2,700 acres of the reclaimed area. The Chief Engineer for Irrigation called for detailed plans and estimates for the latter proposal which are under preparation by the Superintending Engineer. A rough estimate of the cost of the scheme is Rs. 2¼ lakhs.

Remarks by the Chief Engineer for Irrigation.

The Superintending Engineer has since submitted plans and estimates for this work which amount to Rs. 21 lakhs exclusive of Tools and Plant and Establishment charges. To make the scheme pay, a water-rate of Rs. 17 per acre will have to be levied on the 6,430 acres which is expected to be brought under cultivation. But it was reported, that only Rs. 4 per acre could be collected and the project will yield only a revenue of 1·4 per cent on the capital outlay. It has accordingly been proposed to abandon the project.

MAP of the SOUTH ARCOT DISTRICT

SCALE 16 MILES TO INCH.



REFERENCE.

- SYSTEMS IN OPERATION. ———— ●
- PROJECTS UNDER INVESTIGATION. ———— ●
- PROJECTS IN ABEYANCE PENDING VERIFICATION
OF WATER SUPPLIES OR PENDING A DECISION
BEING COME TO ON OTHER SCHEMES OR FOR
OTHER REASONS. } ●
- IRRIGATED AREA. ———— ●

MAP of the SALEM DISTRICT

SCALE 16 MILES TO 1 INCH.



REFERENCE.

SYSTEMS IN OPERATION. ———— ●

PROJECTS FOR WHICH ESTIMATES
ARE UNDER CONSIDERATION. ———— ●

PROJECTS IN ABEYANCE PENDING VERIFICATION
OF WATER SUPPLIES OR PENDING A DECISION
BEING COME TO ON OTHER SCHEMES OR FOR
OTHER REASONS. ———— ●

IRRIGATED AREA. ————

Salem district.

No. 39 Badathalov project.

The project is for the construction of an anicut across the Markandanadhi to divert water to irrigate about 2,000 acres under the Badathalov and other tanks in Krishnagiri taluk of Salem district. The scheme was condemned in 1891, but revised in 1910 when it was roughly estimated to cost Rs. 1½ lakhs. It was considered to be doubtful whether a productive project could be evolved at this cost as there would probably be insufficient demand for water if the water-rates were enhanced. It was, however, decided to collect data as to the supply available for the extension proposed and gauge readings in the river have been taken in the five years ending 1914-15 and from 1919.

Remarks by the Chief Engineer for Irrigation.

The Subdivisional officer in his preliminary report proposed an assessment of Rs. 4 per acre for dry land to be newly converted into wet and an enhanced assessment of Rs. 2 to 3 on the extent of wet ayacut (if first class) for improved supply.

The opinion of the local revenue officers does not appear to have been obtained in regard to the financial prospects. The gauge readings taken are being scrutinised by the Chief Engineer for Irrigation and detailed investigation of the scheme is yet to be made.

No. 40 Marandahalli (anicut extension) project.

It is proposed to utilize some of the surplus water in the Sanatkumaranadhi, which at present passes over the Marandahalli anicut in the Dharmapuri taluk, by improving the channel taking off above the anicut and by increasing the capacities of the Sangambasavam, Maveri and Jertalab tanks which are fed by the channel. It is proposed to extend the irrigation under the first two tanks by 1,600 acres of first crop and 300 acres of second crop; under the third tank 200 acres of second crop will be cultivated in addition to the existing ayacut of 900 acres of first crop. It was estimated that the approximate cost would be Rs. 2.86 lakhs and that a water-rate of Rs. 11 per acre for first crop and Rs. 5-8-0 for second crop would be required to make the project productive. As, however, the Collector reported, on a reference from Government in 1917, that the owners of the land refused to pay rates of Rs. 9 and Rs. 4-8-0 for first and second crop respectively the Chief Engineer for Irrigation was ordered in G.O. No. 456 I., dated 5th November 1917, to submit the estimate for sanction under 33. Famine relief. As the estimate was based on levels taken in 1903-04 the Superintending Engineer was instructed to have new levels taken and in 1921 he submitted an estimate for Rs. 2,06,000 for works only, which with provision for unforeseen and establishment, etc., charges will amount to nearly Rs. 3 lakhs. The estimate is under check in the office of the Chief Engineer for Irrigation.

No. 41 Vaniar reservoir project.

The project provides for the construction of a reservoir across the river Vaniar, three miles west of Harur having a capacity of 1,133 million cubic feet for the irrigation of 12,000 acres. The cost of the reservoir was estimated at 8.14 lakhs. The Vaniar forms the chief source of supply to the Ponnar, and the requirements of the existing irrigation to an extent of 68,000 acres besides the area irrigated in French territory from the latter source has to be considered. The further detailed investigation of the project was ordered to be deferred in G.O. No. 278 I., dated 12th September 1911, till the net surplus available for irrigation in the Ponnar was ascertained by gauging. The surplus available has been determined and as a result the Krishnagiri reservoir project has been abandoned in G.O. No. 67 I., dated 19th March 1919, and a final decision can now be come to on this project.

Remarks by the Chief Engineer for Irrigation.

The Vaniar reservoir project has been abandoned for the reasons stated in the Note by the Chief Engineer for Irrigation, No. 352-E., dated 27th February 1923—vide G.O. No. 54 I., dated 27th February 1923.

Trichinopoly district.

No. 42 Pasambalur tank project.

The project is for the formation of tank on the odai which joins the Vellar near Pasambalur village, Perambalur taluk, Trichinopoly district. The tank will have a capacity of 57 millions cubic feet and the proposed ayacut is 505 acres. The project was estimated in 1918 to cost Rs. 1,04,000 and the anticipated net revenue was Rs. 1,654 which represents a return of 1.59 per cent on the capital outlay. To make the scheme a productive one a water-rate of Rs. 12-2-0 would have to be levied. The Director of Agriculture has reported that the ryots of Pasambalur village are prepared to pay Rs. 11-8-0 an acre and the project is now being re-examined by the Superintending Engineer, VI Circle.

No. 43 Pimbalur tank project.

The proposal is to form a tank by constructing an earthen bund across an affluent of one of the tributaries of the Vellar river to the west of the Perambalur taluk, Trichinopoly district. The proposed capacity of the tank is 65 million cubic feet and the area to be irrigated is 502 acres of single crop. The cost of the project as revised in the year 1917 amounts to Rs. 96,000 and the net revenue anticipated is Rs. 1,650 giving a return of 1.72 per cent on the capital outlay. As a water-rate of Rs. 11-8-0 per acre is required in order that the scheme may prove productive and Rs. 11 to justify its being undertaken as a famine protective work, the project was abandoned in G.O. No. 508 I., dated 7th December 1917. The Director of Agriculture has reported that the ryots under the Pimbalur project are willing to pay Rs. 11-8-0 per acre. The catchment area has been reported to be very saline, and as it may be possible to divert the water of the Kallur and Vellur odai to feed the proposed tank the proposal has been referred to the Superintending Engineer, VI Circle, for investigation.

Remarks by the Chief Engineer for Irrigation.

The recasting of the scheme according to the suggestion of the Director of Agriculture has entailed the necessity of excavating a new channel from the Paravayar to feed the proposed reservoir. The cost of the project has increased, partly on account of this new work and partly on account of the revision of rates, to Rs. 1,48,000 for 'works' only. The ayacut is proposed to be increased to 800 acres single crop, from which a net revenue of Rs. 3,300 per annum is anticipated, but the ryots are not willing to pay Rs. 11-8-0 per acre unless the project is designed for the cultivation of two crops. To make the scheme, as thus altered, productive a water-rate of Rs. 17 per acre is necessary. As it is not possible to frame a scheme for irrigation of two crops without affecting existing irrigation apart from the increase in cost, it has been decided that the further investigation of the project should be dropped.

MAP of the TRICHINOPOLY DISTRICT

SCALE 16 MILES TO 1 INCH.



REFERENCE.

- SYSTEMS IN OPERATION. ●
- PROJECTS UNDER INVESTIGATION. ▨
- PROJECTS ABANDONED. ●
- IRRIGATED AREA.

MAP of the TANJORE DISTRICT

SCALE 16 MILES TO 1 INCH.



REFERENCE.

- SYSTEMS IN OPERATION.....●
- PROJECTS FOR WHICH ESTIMATES
ARE UNDER CONSIDERATION.....●
- IRRIGATED AREA.....■

Tanjore district.

No. 44, Cauvery reservoir project.

The project as revised in 1916 provides for—

(1) The construction of a reservoir in the Upper Cauvery Valley with a dam at Metur, about 35 miles above Erode, with an effective capacity of 80,000 millions cubic feet.

(2) The construction of main irrigation canal with its necessary distributaries taking off from the right bank of the Cauvery at the Grand Anicut proceeding almost due east as far as Tanjore town and then almost due south through Tanjore and Pattukottai taluks.

The improvements and extension of Vadavar canal.

(3) The project provides for the new irrigation of 217,000 acres first crop and 10,000 acres second crop and for supplementing the supply to 80,000 acres of existing irrigation in the new area. It is also expected that the area of second crop irrigation in the delta will be extended by 65,000 acres. In addition to these advantages the project will render the existing supply in the delta more steady and continuous. The project was estimated to cost Rs 4,09,45,600 and the revenue anticipated was 26.67 lakhs representing a return of 6.93 per cent on the capital outlay. The plans and estimates for the scheme were submitted to the Government of India for sanction as a productive public work. Circumstances having arisen which necessitated a second revision of the project in 1921, a revised estimate amounting to Rs 5.62 lakhs has been prepared and the area to be irrigated will probably be increased by 4,000 acres in the new area and second crop by 15,000 acres. This estimate is now (May 1922) in the office of the Chief Engineer for Irrigation and the revenue forecast is under reconsideration.

Remarks by the Chief Engineer for Irrigation.

The question of the revenue forecast of this project is being considered.

Coimbatore district.

No. 45 Bhavani reservoir project.

The project is ordered to lie over until the result of the Cauvery reservoir project is known. This project is divided into two parts:—(a) Upper Bhavani project, (b) Lower Bhavani project. The upper project consists of two strong reservoirs, tunnel, a high level canal and a high level branch for the protection of Noyel irrigation. The lower project consists of a reservoir on the Bhavani river close to its junction with the Moyar and a channel therefrom 100 miles long. Plans and estimates for the two schemes amounting to Rs. 2.65 and 1.09 crores were prepared, but it has been decided to drop the upper project and enlarge the lower scheme. If the Cauvery Reservoir project is carried out, this project will have to be abandoned.

Remarks by the Chief Engineer for Irrigation.

There seems to be no chance of this project being taken up in preference to the Cauvery Mettur project on which it depends.

No. 46 Siruvani water-supply and Irrigation project.

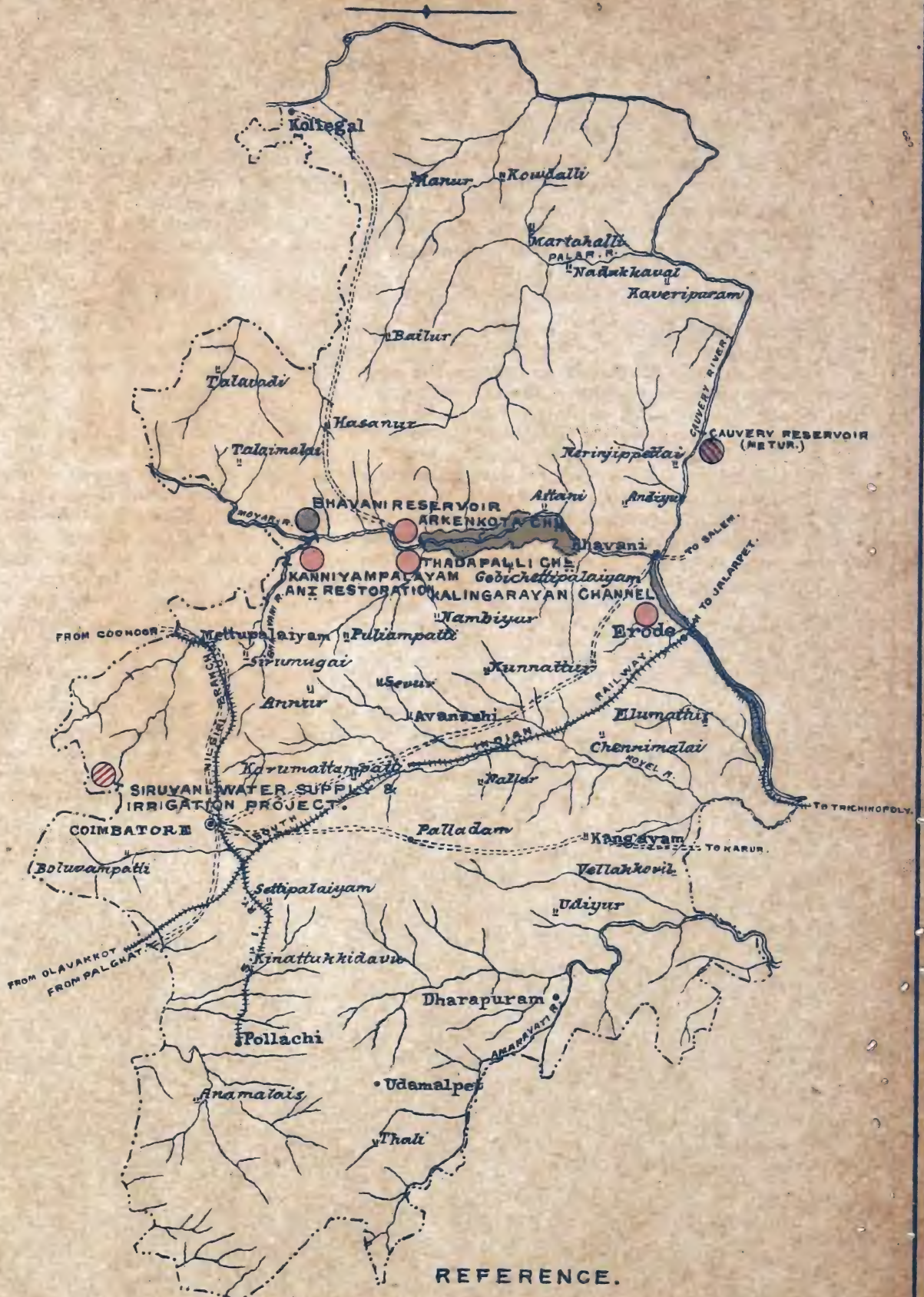
The scheme is for the diversion of part of the flow in the Siruvani, a tributary of the Bhavani, through a tunnel into the Noyel valley. The project is primarily for the water supply of Coimbatore but as considerable quantities of water, in excess of the requirements of the town, can be passed through the tunnel without detriment to Bhavani irrigation it is proposed to utilize this for irrigation in the Noyel river valley. The possibility of storing the water in a reservoir on the Noyel has been investigated and found to be impracticable. It is estimated that there will be sufficient water to extend irrigation by 2,750 acres and a considerable quantity of water will be available annually for storage in existing tanks, but no extension of irrigation will be possible due to this. The question of where and how the extension can best be made is at present (May 1922) under investigation.

Remarks by the Chief Engineer for Irrigation.

Two schemes are being investigated for the proposed new extension: one for a new anicut and channel in the upper reaches of the Noyel, which will benefit a single big mirasidar and another for a new channel from the right of the Chitrachavadi anicut which is to be revised for an ayacut of 2,750 acres. The Superintending Engineer is of opinion that the ryots would be willing to pay a water-rate of more than Rs. 10 per acre, while the big mirasidar referred to has already offered to pay Rs. 10 per acre.

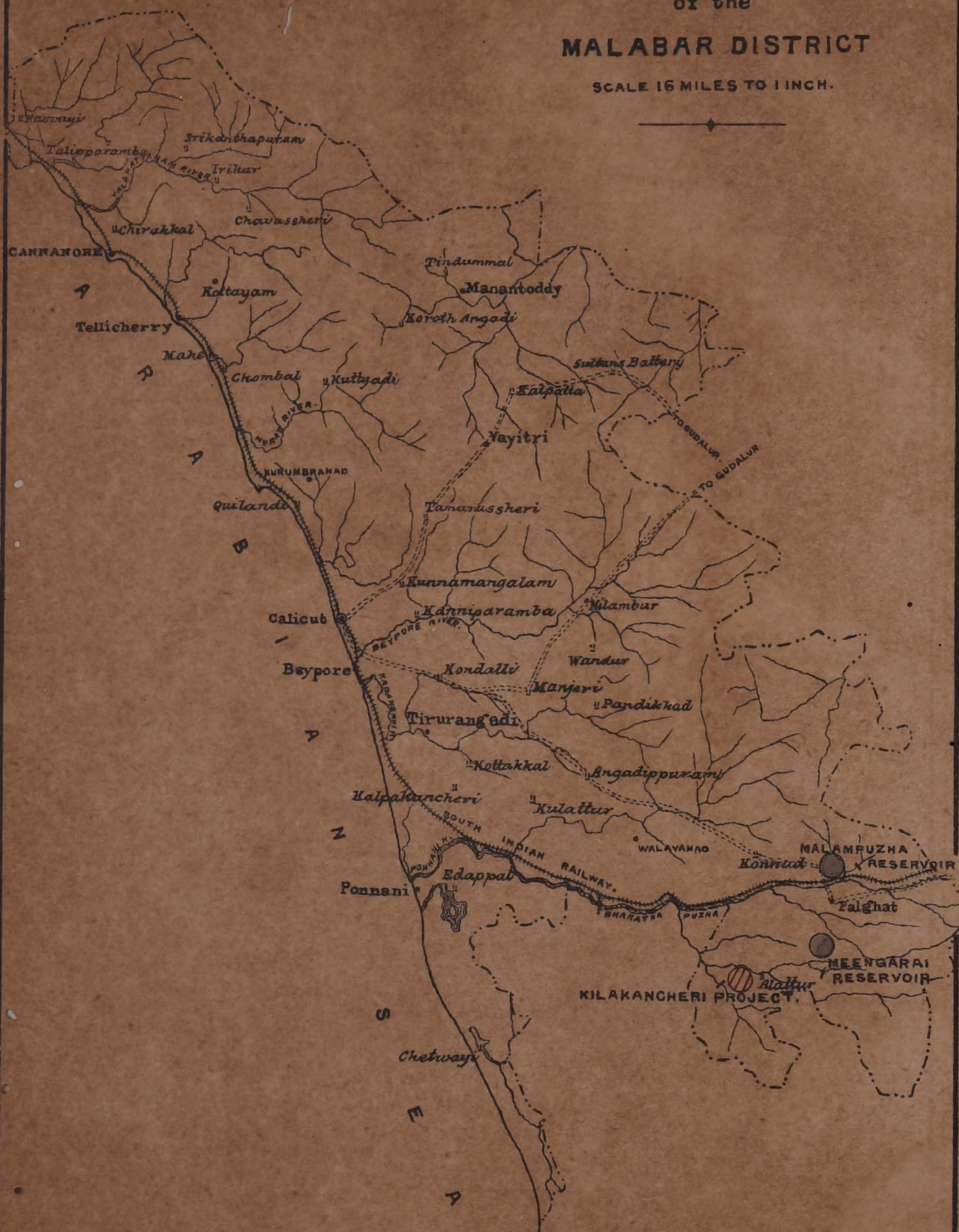
MAP of the COIMBATORE DISTRICT

SCALE 16 MILES TO 1 INCH.



MAP of the MALABAR DISTRICT

SCALE 16 MILES TO 1 INCH.



REFERENCE.

PROJECTS UNDER INVESTIGATION. ---

PROJECTS IN ABEYANCE PENDING VERIFICATION
OF WATER SUPPLIES OR PENDING A DECISION
BEING COME TO ON OTHER SCHEMES OR FOR
OTHER REASONS. ---

Malabar district.

No. 47 Kilakancheri project.

No details are on record in the office of the Chief Engineer for Irrigation. The Superintending Engineer stated in 1921 that he was unable to recommend the detailed investigation of the scheme and again in 1922 he reported to the same effect giving as his reason the lack of scope for extension of irrigation to make the project a paying proposition, he also stated that the Collector was of the same opinion. The Chief Engineer for Irrigation has instructed the Superintending Engineer to submit a more detailed preliminary report.

Remarks by the Chief Engineer for Irrigation.

This is a project which has not yet been investigated in detail.

As regards the water-rate proposed, it is reported by the Collector that a rate of Rs. 5 per acre could easily be realized, but it could only be done under present conditions by taking agreements from the cultivators who would be benefited.

No. 48 Malampuzha reservoir project.

The proposal is to form a storage reservoir by building a dam across the Malampuzha river about half a mile below the site of the Pathani anicut which is located about 2 miles above the junction of this river with the Wallayar. The project which was expected to irrigate 40,000 acres was roughly estimated at Rs. 26½ lakhs yielding a return of about 4 per cent. This is the most promising of the schemes suggested in the Palghat taluk. It has not yet been investigated in detail. Gaugings have been made of the water supplies available in the river, but no final orders have yet been passed on their results.

Remarks by the Chief Engineer for Irrigation.

The Collector proposed a water-rate of Rs. 5 per acre for the irrigation of second crop on wet lands and Rs. 7 per acre for the single wet crop on dry. The ayācut as estimated by the Executive Engineer (Mr. Campbell) is 40,000 acres. The Collector states that this estimate is fairly safe if it is regarded as an estimate of the area irrigable as distinguished from the area likely to take water. By far the greater part of the ayācut of 40,000 acres is already under paddy cultivation and the proposed scheme is for the purpose of protecting the lands against droughts in a bad year and in any case making them more productive. It is possible to get a guarantee of return if the new Irrigation Bill is passed, as the increased supply of water to the lands already assessed as wet can be classed under clause 34 of the proposed Bill.

No. 49 Meengarai reservoir project.

Two schemes for constructing a reservoir on the Meengarai river in the Palghat taluk were reported to Government. The smaller scheme recommended by the Collector contemplated the supply of water to 12,500 acres of land on the left side of the river and was estimated to cost 10 lakhs of rupees yielding a return of a little over 4 per cent. The larger scheme, drawn up by the Executive Engineer (Mr. Campbell) was expected to cost Rs. 13 lakhs. It was designed to irrigate in addition to the area already fixed for the smaller scheme, all the irrigable lands in the five villages lying in the north side of the river also. The total area commanded was reported to be 24,000 acres and the net revenue anticipated was equivalent to 7.7 per cent on the capital outlay. The bigger scheme has been further investigated in regard to the revenue aspect and the Collector has submitted a full and detailed report. The question as to what water-rates are to be levied is lying over pending the results of the gaugings that are now being made in regard to the supplies available.

Remarks by the Chief Engineer for Irrigation.

A water-rate of Rs. 5 per acre for dry lands and Rs. 4 per acre on single and double crop wet lands was proposed, but as stated by the Special Officer no final orders have yet been passed on the subject.

As to whether an assured water-supply can be guaranteed, the matter is under investigation by the Public Works Department and the necessary gaugings are being conducted.

Regarding the guarantee of return, if the new Irrigation Bill is passed, the Collector reports that the ryots would bind themselves to an agreement only if they are allowed to insure their double crop area at Rs. 2 an acre and to pay Rs. 5 for wet lands and Rs. 8 for dry lands.

The project is in no way dependent on any other project or connected with the projects now under operation.

Tinnevely district.

No. 50 Papanasam reservoir project.

The proposal to construct a reservoir on the Tambraparni in the hills above Papanasam to regulate and increase the supply to the anicuts across the river below has been under consideration by the local officers off and on from the year 1854. As a result of special investigation a scheme was submitted in 1902 for constructing a reservoir at an estimated outlay of Rs. 33,75,000. It was anticipated that the net revenue from the extension of irrigation that would be possible would be Rs. 1,40,000 which would give a return of a little over 4 per cent on the capital outlay. The scheme was abandoned in G.O. No. 8 L., dated 13th January 1903, but on the recommendation of the local officers, who considered that the catchment area of the proposed reservoir and the rainfall in it had been under estimated, the question was reopened in 1904. In 1912 five rainfall stations were installed in the catchment area of the proposed reservoir. Gauges were subsequently erected in the river and read with a view to estimating its discharge from the deduced river surface slopes and later current meter gaugings have been made from which Messrs. Harvey & Co.'s Mill bridge gauge, which has been read since the year 1905, can be calibrated. The current meter gaugings of 1917-18 and 1920 are under examination in the Cauvery Gauging division.

MAP of the TINNEVELLY DISTRICT

SCALE 16 MILES TO 1 INCH



REFERENCE.

SYSTEMS IN OPERATION. ---●---

PROJECTS IN ABEYANCE PENDING VERIFICATION
OF WATER SUPPLIES OR PENDING A DECISION
BEING COME TO ON OTHER SCHEMES OR FOR
OTHER REASONS. ---●---

IRRIGATED AREA. ---●---